STEEL
The Metalworking Weekly

OCTOBER 17, 1955
Vol. 137 No. 16

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behind the scenes

Instructive Reading

The most read column in STEEL is Metalworking Outlook. Every survey shows it leading the list; every investigation of our readers' reading habits reveals that it draws them like a magnet. Why so much interest? We approached Assistant Managing Editor John Morgan, and put the question right to him. "What's so hot about Metalworking Outlook? A body would think it carried selected excerpts from *Esquire.*"

By a remarkable coincidence, it turned out John is the author of Metalworking Outlook. An investigator couldn't ask for a better break than that. Moreover, he was willing to talk.

The column has an ancestor (it was called Present, Past and Pending). Even if nothing more had been done to it, the killing of the title alone would have rated a cheer. As it gradually shook down into its present form, John found himself with more material than space. STEEL's editorial staff, the largest of any business publication, is under standing orders to contribute all the news it can uncover that is in the province of metalworking. Add to this the flood of mail that pours into STEEL's editorial offices every day, and you come up with a respectable pile of information.

John has to wade through this material, select nine items, plus enough hints, to cook up a weekly prophecy. When you consider that he is obliged to examine more than 400 pertinent items a week and boil them down to less than a dozen, it is evident that his judgment gets a workout. Indeed, the screening and presentation of this capsule information represents a real editorial job—and a real service to busy readers.

Please Be Advised

While we're on the subject of editorial digestion, it might be appropriate to mention the ruin that is creeping through business English. Herbert C. Morton, professor of business administration at Dartmouth, is convinced that all of us can improv our correspondence if we eliminat cliches and jargon. He mentions spe cifically—and you can recall man more: "Yours of the 14th inst. re ceived and contents noted;" "we be to state;" "your humble servant. The list is as long as your arm (an mine).

Prof. Morton is amazed to reflec that some persons take so litt pride in writing concise letters. I business establishments, he said, to often a letter writing job falls to th person who happens to be neares and, behold, cliches and jargon ge a new lease on life.

"Don't use more words than yo need to convey your thought," he ad vises. "Don't use big words an technical terms when everyday word will do. Write to *express,* not *impress.*"

Live Bargains

Here's a little philosophy with sarcastic slant. It turns up every often in house organs, blotters, mai ing pieces and souvenir cards. Th prices vary with the times:

A live man pays 50 cents for a shav
A dead man pays $5.
A woolen overcoat costs $50.
A wooden one costs $500.
A live man pays $2 for a taxi.
A dead man pays $50.

Moral: Stay alive and save mone

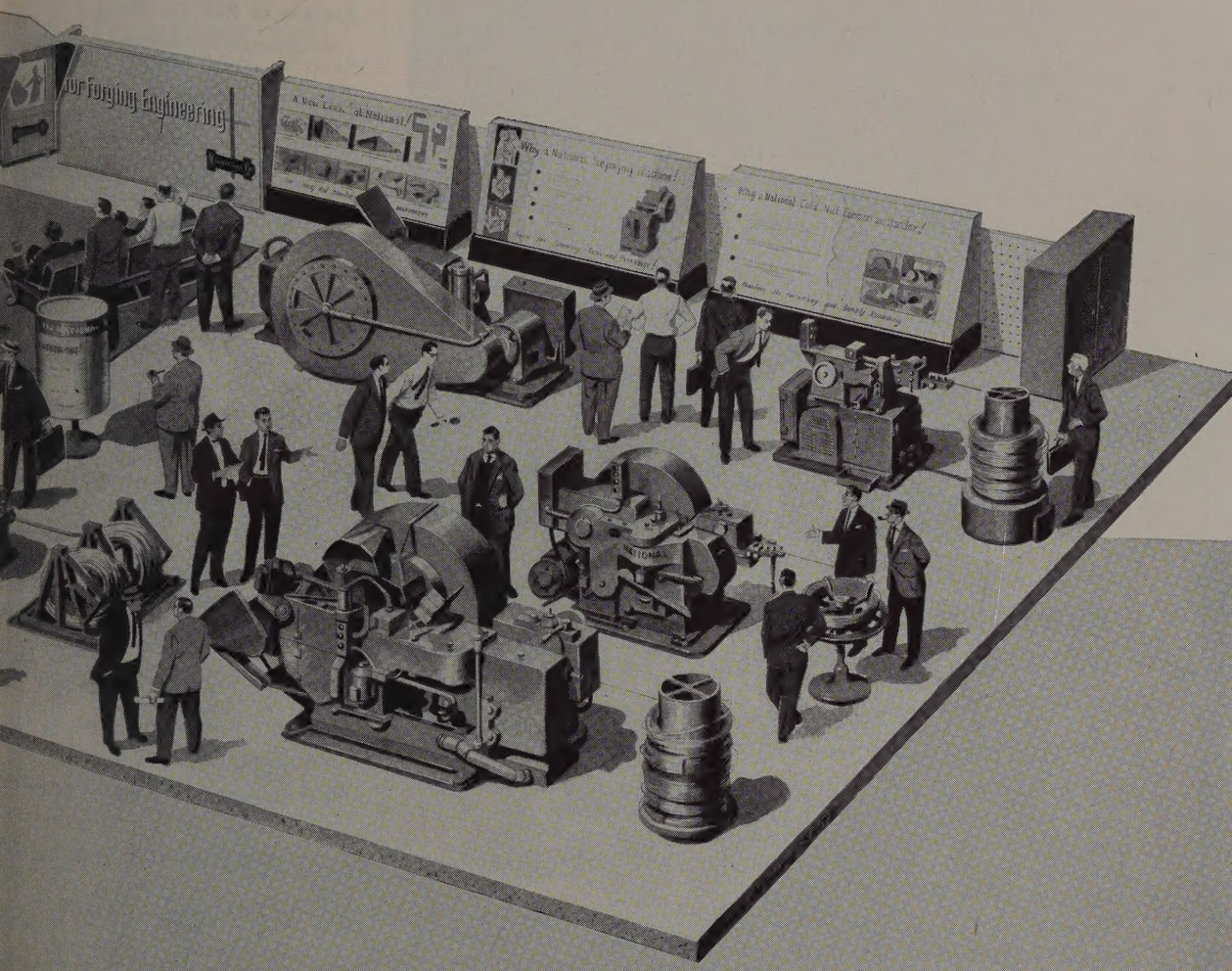
Poets' Corner

A recent challenge to compose t fifth line of a limerick that wou give even Ogden cause to gnash h teeth elicited some rather spirit jottings—most of them unprintab Hats off to Mrs. A. W. Simmill, Mi burn, N. J., for keeping it clean.

A banker of medium weight
Took a seat, but discovered too la
That while he was agile
The armchair was fragile
It collapsed like an old swinging ga

Shrdlu

(Metalworking Outlook—Page 67)



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LETTERS TO THE EDITORS

Article Is Put To Work

Your story, "Business Trends: P Them To Work" (July 18, page 93), one of the most comprehensive artic I have read on the subject.

I am giving a paper before the Che ical Specialties Manufacturers Associ tion in December on "How You C Forecast for Your Own Business," a I would appreciate permission to quo from your article.

May I also have permission to u four of the charts in a projection m chine, as a part of the discussion?

Melvin F Preside Chemical Specialties Manufacturers Associat New Yo

• *Permission granted.*

Forecast Helpful To Research

In the Metalworking Outlook colun of Sept. 19 (page 54), we noted item, "Of Things To Come." It sur marizes a survey regarding predictio

This information is interesting to and helpful in performing our co mercial research functions. We wou appreciate the address of Hugh W. Lo & Co. which conducted the survey.

E. F. Burn Assistant to Mana Commercial Research Sect Oil Well Sup Division of U. S. Steel Co Dal

• *It's 511 Westminister Ave., Elizabe N. J.*

Instrument Measures Impact

Two new instruments were discuss in the Technical Outlook column Aug. 8 (page 69).

The first, developed at New Yo University, measures impact in terms dynamic stress-strain relationship. T second was the improved torsion t machine designed by Pitman-Du Laboratories for the Army Ordna Corps.

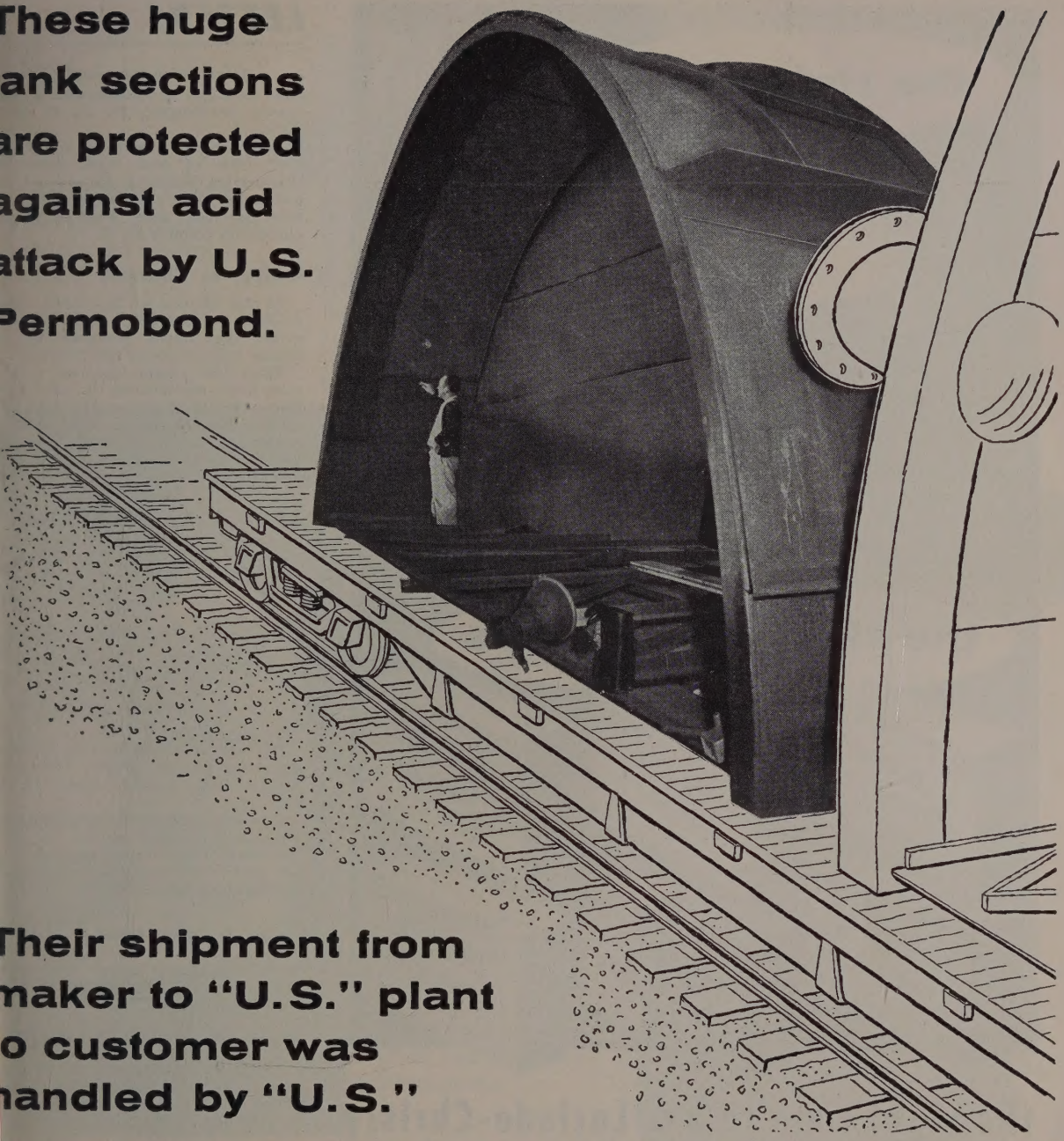
Any additional data you can furn will be appreciated.

Michael J. McGl Metallurgical Research Divis Cleveland Twist Drill Clevel

• *The first instrument is discussed the 22-page report, "Improved Met for Testing in Torsion Impac (PB111613), which can be obtai*

(Please turn to page 12)

These huge ank sections are protected against acid attack by U.S. Permobond.



Their shipment from maker to "U.S." plant o customer was handled by "U.S."

he expansion plans of a Southern chemical plant illed for the design of a processing tank that was so ıge it could not be shipped in one piece.

So the steel fabricator's engineers, working with J.S." engineers, designed the tank in 2 parts. The icky task of transporting these immense sections from e fabricator to the "U.S." plant (where U.S. Permo- ınd protective linings were installed) and from there the chemical plant was *arranged* by "U.S." traffic specialists. When the 2 sections arrived at the chemical plant, "U.S." field service men vulcanized the joints after the halves were welded together, making a complete rubber lining with no seams or joints. Thanks to the Permobond® lining, the tank is immune to acid attack.

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LETTERS

(Concluded from page 10)

from OTS, U. S. Department of Co merce, Washington 25, D. C. for cents.

The second is discussed in the Ju 1955 issue of New York Universit Engineering Research Review *which obtainable from the Office of Inform tion Services, New York Universi University Heights 53, N. Y.*

Guilty, as Charged

In the Mirrors of Motordom colu of Sept. 5 (page 55), it was incorrec stated that Buick possesses the o torque tube drive in the industry.

Since 1941, Nash has used a torc tube drive continuously in some mo Currently, all Nash and Hudson se models use this drive along with springs at the rear, a la Buick.

Frank H. Bur
97 Highland A
Watertown, Co

Aluminum Cuts French Fries

We noticed a reference to alumin diecasting in the article, "Diecasti Lighten Sewer's Load" (Sept. 19, p 122).

Can you recommend anyone who m ufactures household articles and no ties made from diecast aluminum? are particularly interested in obtain catalogs on kitchen gadgets.

H. W. Ha
Resident Engi
C. Tennant, Sons & Co. of New Y
New Y

• *We suggest you contact the Ameri Die Casting Institute, 366 Madison A New York 17, N. Y.*

Story Ideal for Reference

Please send two copies of the arti "Heat Treating Copper-Base Allo (Sept. 19, page 114). This article is formative and ideal for file refere

M. E. W
Mfg. Research D
Ford Motor
Dearborn, M

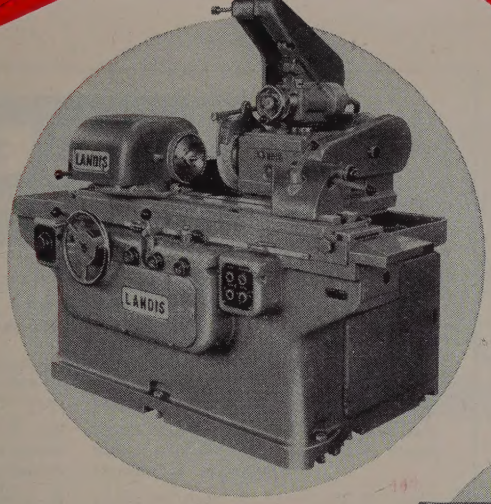
Elevator Suppliers Wanted

In reading the article, "Elevator S Going Up" (Sept. 12, page 63), we c across your statement: "Sixty compa in the U.S. manufacture some m components of the freight and pass ger elevators."

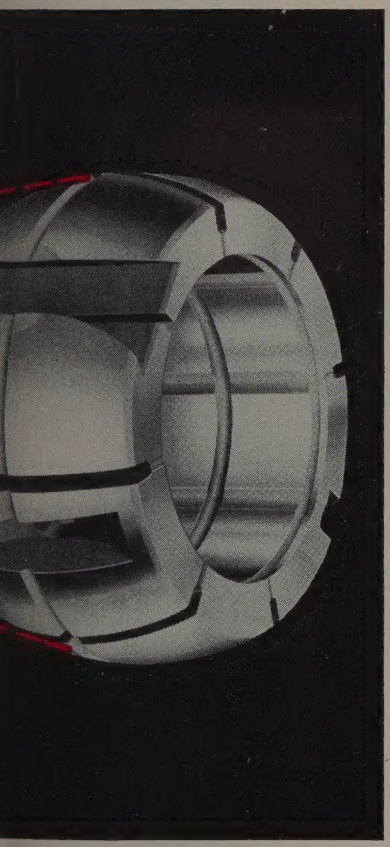
We would like to know who t people are. May we have a list?

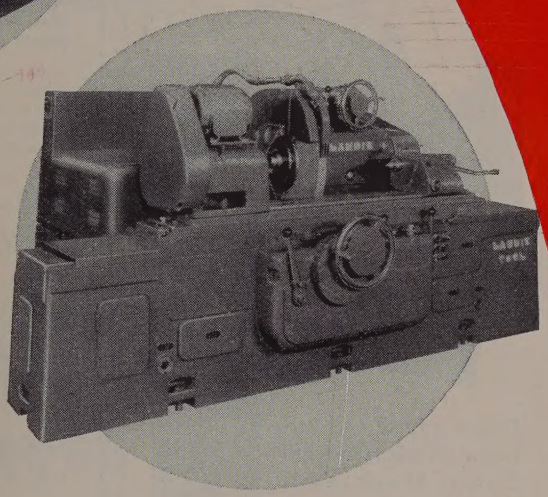
L. F. P
Presi
Lustrik
Philadel

• *This statement was based on mates made by several members of industry. We suggest you write J McArdle, commissioner, National El tor Manufacturers Industry Inc., Park Ave., New York 17, N. Y.*

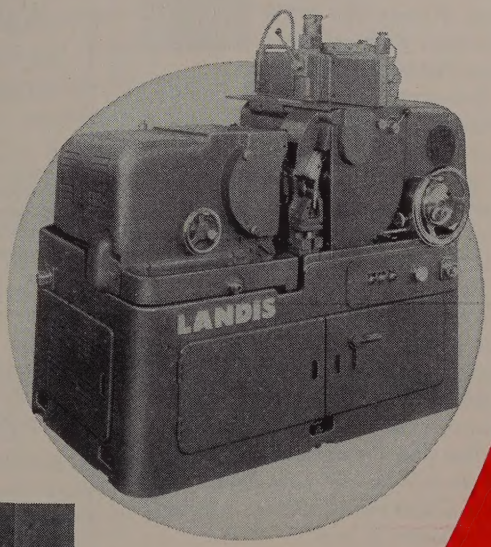


Landis Universal Grinders have rigidized Microsphere bearings and spindle.

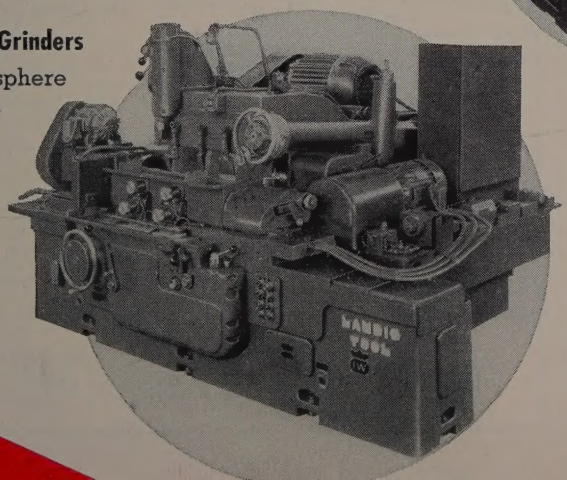




Landis Plain Grinders have rigidized Microsphere bearings and spindle.



Landis Centerless Grinders have rigidized Microsphere bearings and spindle in both the grinding wheel and regulating wheel heads.



Landis Single-Purpose Grinders have rigidized Microsphere bearings and spindle.

STEEL
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CALENDAR
OF MEETINGS

17-18, American Coke & Coal Chemicals Institute: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: 711 14th St. N.W., Washington 5, D. C. President: Samuel Weiss.

17-18, Boston Conference on Distribution: Hotel Statler, Boston. Information: Daniel Bloomfield, director, 80 Federal St., Boston 10, Mass.

17-19, American Management Association: Office management conference, Hotel Statler, New York. Association's address: 330 W. 42nd St., New York 36, N. Y. Vice president: James O. Rice.

17-21, National Metal Congress & Exposition: Commercial Museum and Convention Hall, Philadelphia. Information: American Society for Metals, 7301 Euclid Ave., Cleveland 3, O. Secretary: W. H. Eisenman.

17-21, American Society for Metals: Annual meeting and exhibit. Benjamin Franklin hotel. Philadelphia. Society's address: 7301 Euclid Ave., Cleveland 3, O. Secretary: W. H. Eisenman.

17-21, American Welding Society: National fall meeting, Bellevue Stratford hotel. Philadelphia. Society's address: 33 W. 39th St., New York 18, N. Y. Secretary: J. G. Magrath.

17-21, Society for Nondestructive Testing: Fall technical meeting. Sylvania hotel. Philadelphia. Society's address: 1109 Hinman Ave., Evanston, Ill. Secretary: Philip D. Johnson.

17-21, National Safety Congress & Exposition: Conrad Hilton, Congress, Morrison and LaSalle hotels, Chicago. Information: L. L. Forney, general secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

18-19, American Management Association: Special packaging conference, Hotel Commodore, New York. Association's address: 330 W. 42nd St., New York 36, N. Y. Vice president: James O. Rice.

19-20, American Society of Mechanical Engineers: Fuels-coal conference, Neil house, Columbus, O. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

19-20, Steel Shipping Container Institute Inc.: Fall meeting. Pierre and Hampshire House hotels, New York. Institute's address: 200 Fifth Ave., New York 20, N. Y. Secretary: L. B. Miller.

19-21, Gray Iron Founders' Society Inc.: Annual meeting, Schroeder hotel. Milwaukee. Society's address: 930 National City—E. 6th St. Bldg., Cleveland 14, O. Executive secretary: Donald H. Workman.

20-Nov. 3, International Atomic Energy Exhibit: Carnegie Endowment International Center, United Nations Plaza, 46th St. and First Ave., New York, N. Y. Information: Atomic Industrial Forum Inc., 260 Madison Ave., New York 16, N. Y.

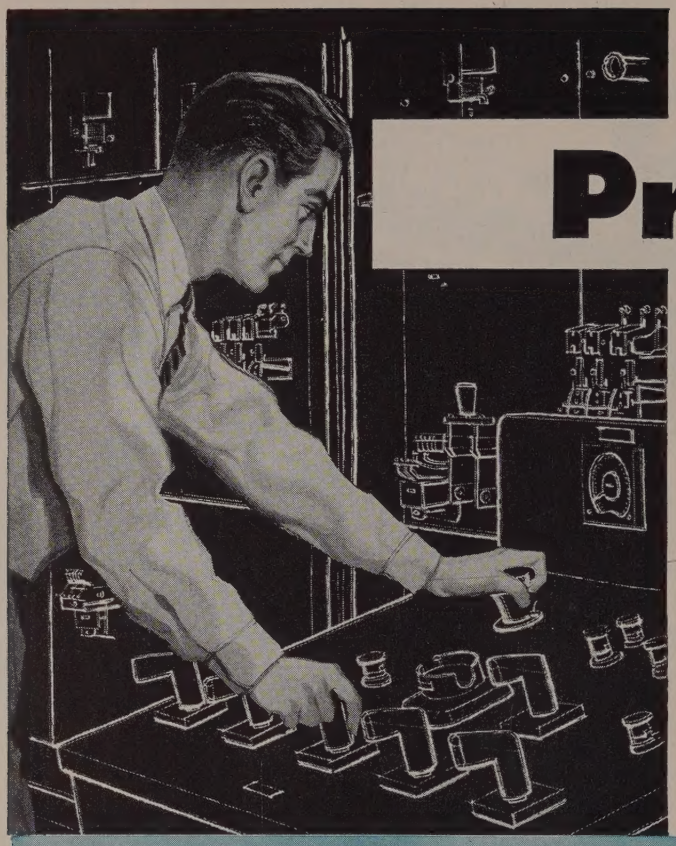
23-26, American Gear Manufacturers Association: Semiannual meeting. Edgewater Beach hotel, Chicago. Association's address: One Thomas Circle, Washington 5, D. C. Secretary: John C. Sears.

23-26, American Hardware Manufacturers Association: National meeting, Marlborough-Blenheim hotel, Atlantic City, N. J. Association's address: 342 Madison Ave., New York 17, N. Y. Secretary: Arthur L. Faubel.

23-26, National Association of Sheet Metal Distributors: Annual meeting, Marlborough-Blenheim hotel, Atlantic City, N. J. Association's address: 1900 Arch St., Philadelphia 3, Pa. Executive secretary: Thomas A. Kernley Jr.

23-26, Scientific Apparatus Makers Association: Fall meeting, the Cavalier, Virginia Beach, Va. Association's address: 20 N. Wacker Dr., Chicago, Ill. Executive vice president: Kenneth Andersen.

24-25, Rail Steel Bar Association: Fall meeting, Sherman hotel, Chicago. Association's address: 38 S. Dearborn St., Chicago 3, Ill. Secretary: W. H. Jacobs.



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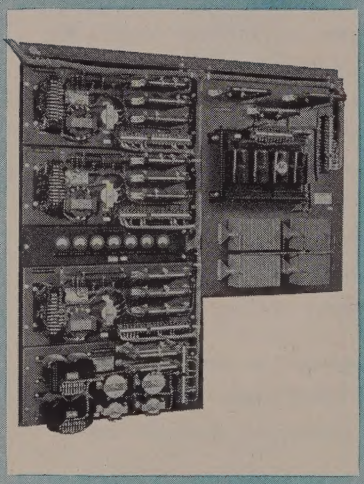

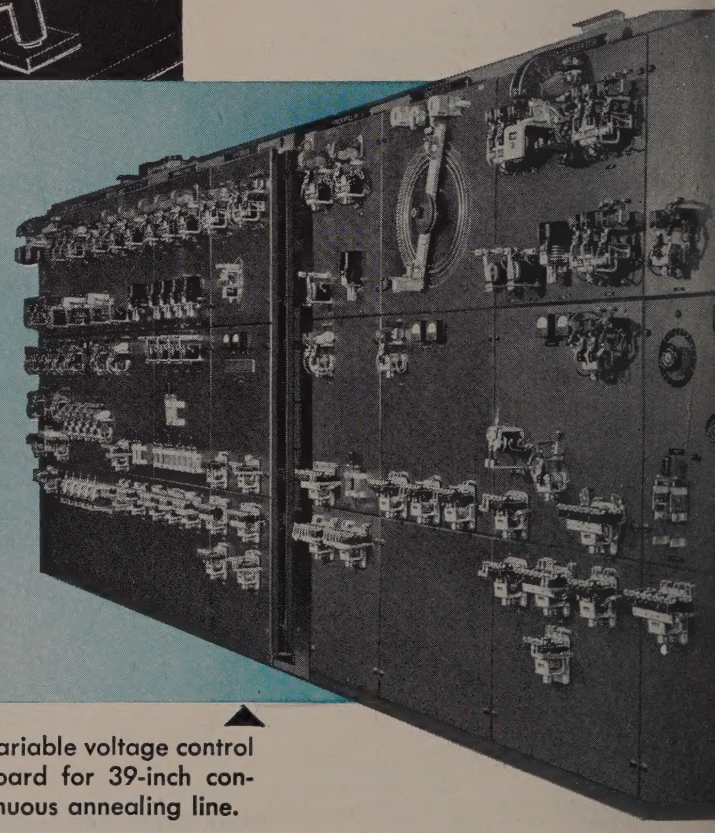

Magnetic amplifier speed regulatory panels.

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Metalworking Outlook

Trial Balloon on Steel Prices?

Within the last ten days at least three prominent steel executives have commented on the need for higher steel prices. U.S. Steel Corp.'s Benjamin F. Fairless, National Steel Corp.'s Ernest T. Weir and Youngstown Sheet & Tube Co.'s J. L. Mauthe have pointed out that the high cost of expansion (at least $300 per ingot ton for all-new facilities) requires higher steel prices, more liberal government tax depreciation policies and/or more investor support.

Black Market in Nickel

A black market in nickel is becoming more troublesome. The Commerce department has caught two firms which got nickel salts and anodes under U.S. priority ratings, then used the material for nondefense products or resold it. As a result, Commerce is tightening up on nickel priorities. Consumers will have to justify use of preference ratings by identifying related military contracts.

Report on Business

Here's the September business report of the Chicago purchasing agents: Deliveries are still slow. The upward price spiral has moderated. Inventories are less stable. Employment, production and order backlogs are up. More and more companies find they must order their chief materials at least 60 days in advance to have them when needed. Profits show an encouraging increase.

Struggle for Freight Cars

A freight car shortage will bother industry for the next several weeks. Its causes: More carloadings (15 per cent higher than a year ago) and declining car ownership (about 1,700,000 owned now, compared with 1,735,000 last Jan. 1). There's hope for relief on the car ownership phase, but it won't come for months. Railroads are highballing new orders to carbuilders. The order backlog stood at only 13,013 on Sept. 1, 1954. It had jumped to 52,803 on the same date last month. Because of farm crop movements, this is the peak rail traffic season. The pressure should be off by mid-November.

Toward More Private Ownership

The Air Force wants to own less industrial real estate and equipment. It reasons: Since AF material deliveries will remain stable at about $6 or $7 billion per year for the next several years, contractors can afford to have more of their own facilities. From now on the Air Force will give preference in awarding contracts to the companies that have their own facilities. Of the $7.4 billion the service will spend on materials in fiscal 1956, $2.93 billion will go for airframes and missiles, $1.61 billion for power

plants, $1.07 billion for armament and electronics and $1.82 billion for ground handling and training equipment, fuels and miscellaneous items.

Misleading Figures?

The Senate Military Preparedness Subcommittee claims that the Defense department issued "misleading" figures in a list of the 100 largest defense contractors which omitted General Motors and 44 other firms. Sen. Lyndon Johnson (Dem., Tex.), group chairman, says the revised Pentagon figures omit a key six-month period in which GM, Boeing and General Dynamics received big contracts. He charges: By failing to cumulate the figures from 1950, the list fails to show that GM still tops defense contractors. Defense department spokesmen deny any intention to deceive Congress. They say the list was prepared and conforms to the specifications originally made by Senate Banking Committee Chairman J. William Fulbright (Dem., Ark.).

Uranium Milling Capacity Soars

Uranium milling capacity is at last catching up with mining facilities. Milling production this year should double last year's. It should double again next year, with 11 plants in operation. Says R. S. Aries & Associates, chemical consulting firm: "Efficient chemical engineering is making the new mills far more economical than the old converted vanadium plants. At a cost of about $10,000 per ton of daily capacity, milling is far more expensive than mining to go into."

Ogden Acquires Scrap Firm

In a deal involving about $20 million, Luria Brothers & Co., major iron and steel scrap firm, was taken over last week by Ogden Corp. Since 1953, Ogden has acquired four other companies in diverse metalworking fields. It was formerly an investment house. Luria policies and business remain unchanged.

Eight Times Safer

How safe is industry? "Our workmen," says President Charles M. White of Republic Steel Corp., "are eight times safer at their jobs than they were 25 years ago. And the accidents that happen are only one-fifth as serious, on the average."

Straws in the Wind

Iron and steel payrolls in August hit $320.7 million, a new high . . . In the four months since GM agreed to a full union shop, United Auto Workers has brought 600,000 more members under such contracts, with a big gain in dues . . . Labor observers deplored the necessity to declare martial law in New Castle, Ind., last week as a result of strike violence at Perfect Circle Corp.'s foundry there; whatever the outcome, they believe, the whole affair is a blow to the trend toward more peaceful labor-management relations.

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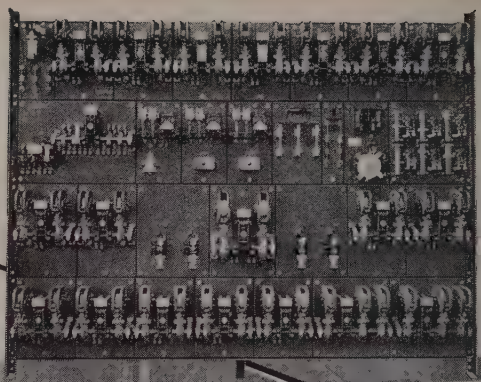

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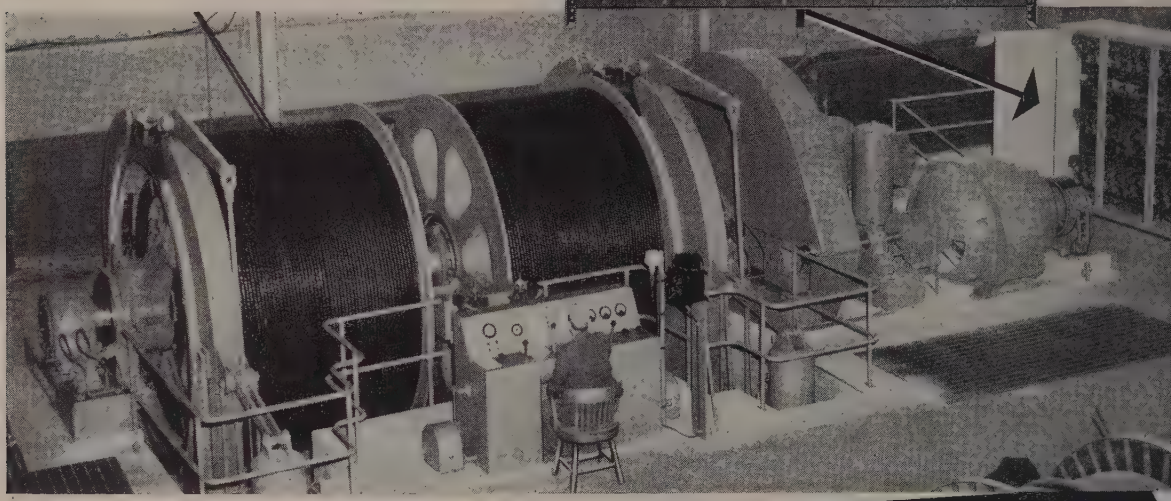
Frequency R
Magnetic Cont



PERFECT CONTROL

Cage Creeps Up Or Down—Runs at Full Speed — Is Slowed Down From Operator's Master Switch.

The passengers enjoy a velvet-smooth ride on this mine-hoist. EC&M Frequency Relay Control permits adjusting the torque of the two 200 hp, 440-volt wound rotor induction motors to cause the cage to creep, to run at full speed, or to operate at intermediate reduced speeds.

The operator's multi-speed-point EC&M Cam Master Switch makes speed selection quick and sure. EC&M Frequency Relays automatically switch motor connections to maintain safe operation under all conditions.

Because of the highly efficient operation throughout the past five years of a similar hoist equipped with EC&M Frequency Relay Control, the user specified EC&M Control for this latest hoist installation. If you have a hoist problem, it will pay you to look into EC&M Control.

SMOOTH RIDE FOR MEN OR MATERIALS

1. Cage creeps to stop with passengers.
2. Cushioned acceleration during hoisting and lowering.
3. Slowdown by motors—EC&M Type WB Brakes set and hold the load.
4. Slow speed for rope inspection—about 12% of normal hoisting speed.

No. 28 ACCELERATOR Bulletin describes this EC&M hoist control system. Write for your copy.

THE ELECTRIC CONTROLLER & MFG. CO

4498 LEE ROAD ★ CLEVELAND 28, OHI

Clear Thinking

The conflicting reports, rumors and speculation in the three weeks following President Eisenhower's illness have profoundly influenced the nation's thinking and planning.

Entirely credible is the report that the President will not run again in 1956. Of course, there is uncertainty over who will be in the White House in 1957.

But then there's the rumor that Brother Milton Eisenhower will emerge as the Republican candidate from a field including Vice President Nixon, Senator Knowland, former Governor Dewey and Chief Justice Warren.

There's speculation that Democrats can pick Stevenson, Harriman, Kefauver, Russell or Rayburn and win. Swept aside will be the business-minded leaders in government. Ascending back into power will be the New Dealers.

To help muddle the situation are the current restraints on credit which are designed to slow down inflation—and thereby sales of houses, autos and consumer durables.

On the international scene, the communists are making new encroachments in the Far East and Middle East. The French and Germans may tangle over the Saar question. The not-so-cold war is a little colder again.

Certainly, there is cause for concern, but perspective is needed, as these facts witness:

Gross national product in the U. S. is at a new peak of $390 billion, may reach $400 billion in 1956. Steel production last week reached a new high; unemployment dropped to a new low. Personal spending is likely to get a new shot in the arm through income tax cuts. Defense spending will be heavy.

The basic foundation for continued long-term growth and prosperity remains unaltered: A growing population that insists on increased earnings to buy more things to enjoy in added leisure time. To keep ahead, technology is advancing at a breathless pace.

No matter which party wins the 1956 elections, the U. S. will have a stable government. Between now and then we must not lose sight of our long-range goals. What we need today is more clear thinking.

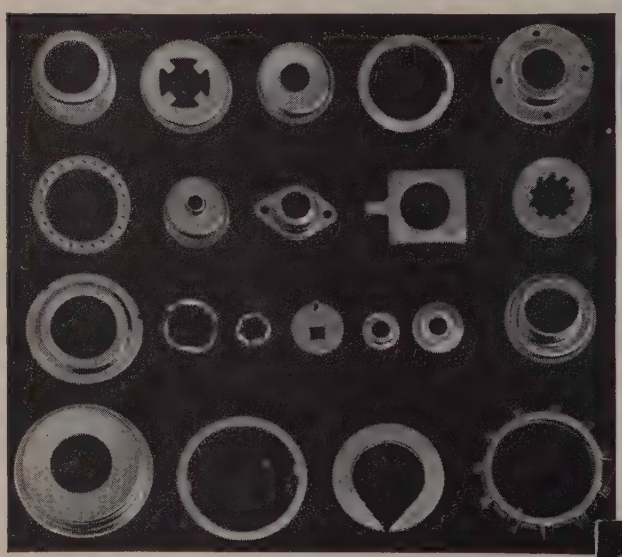
Irwin H. Such

EDITOR

LEADERSHIP *Backed by*
68 Years of Continuous Service to American Industry

MILWAUKEE WROT WASHERS

SINCE 1887



In terms of "satisfaction to the customer" the domin
leadership of Wrought Washer Mfg. Company in this s
cialized field represents not only a thoroughly dependa
source of supply to meet all your requirements for Stand
and Special Washers, but of equal importance, it car
with it a wealth of technical know-how dealing with a w
variety of production and design problems . . . available
you as a gratis service. More than 25,000 sets of dies
stock" at our plant offer the greatest range of selectiv

Our equipment for handling contract production of stampings includes presses for blanking, forming, drawing, shearing and extruding. In many cases it is possible to produce stampings at a lower cost than they can be produced in your own plant, with our own equipment. Our own tool and die-making shop enables us to make up the necessary tools to fit your specifications.

STAMPINGS

We are equipped to furnish stampings in any desired materials and finishes, ranging in size from small parts to large heavy-gauge pieces. Our engineering staff will be glad to co-operate with you in every way consistent with economical and efficient production.

• • •

Send us your blueprints for quotations on special washers and stampings made to your individual specifications. Write for copy of 76-page Catalog "30" with tool list and complete round washer specifications.

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Check Your Human Relations I.Q.

1. Are we doing an effective screening job to fully utilize the capabilities of the individual?
2. Do our salary structure and fringe benefits compare favorably with companies in our industry and geographic location?
3. Does each individual understand our job classifications, his salary range and potential?
4. Do we use training programs and job rotation to best advantage?
5. Are we taking full advantage of prestige-building practices?
6. Do we have the best possible communications and contact between top and middle management?
7. Do we encourage outside social and civic activities to help the individual build better community ties?
8. Is top management's general attitude one of genuine interest in middle management members as individuals?

Middle Management: How To Hold It

HEN YOU invest $7000 a year ning a new graduate engineer still run a 50-50 risk of not ing him five years, turnover omes a real problem—and ex- sive."

hat's the way a metalworking connel executive sums up the e situation in engineering. t," he adds quickly, "don't over- the turnover in the other e-collar, middle-management ks—it's increasing too."

ocus—Today's high-level busi- activity and expansion are ac- rating the problem. Most com- ies report a turnover rate of be- en 10 and 15 per cent in middle- agement; but it's the markedly ner rate in the engineer and ng employee group that's focus- management's attention on edies.

alary, while often a key factor idding for a college graduate, not the chief motive in job ping, most personnel execs feel. t frequent factors mentioned: poor attitude of top manage- t toward the middle ranks, r placement of the individual the use of his talents, a lack restige building practices and c differences between the philosophies of the technical and business management employee.

Training—Turnover is highest in the first five years—particularly in the engineering and technical group where demand outstrips supply. The 50-50 figure, while high, is not the exception, and it's a major reason for new emphasis on training programs. Hotpoint Co., Chicago, for example, plans to increase the number of young men in its development program from 50 to 125.

Training programs vary in scope and length; two years is about average. Not only do these programs help orient the employee with the company and field in which he will work, but they get him through the first two or three years when turnover is highest.

Appraisal—Industry is increasing the practice of periodic reviews with the individual to discuss his progress and future with the company. Important here: Effective job classification with salary ranges. Most personnel men feel that the individual should know the upper and lower limits to create incentive. Some feel that the upper limit should not be known, so the individual can't get the feeling he's "bumping the ceiling and it's time to shop around."

The review—it should be held at least once a year—assures the individual that he's not a forgotten cog; it assures him of fair treatment regarding salary boosts and promotions; and it gives management an effective tool for evaluation.

Waning? — Pension programs, bonus incentives, health and insurance programs and other fringe benefits are factors. But many personnel men think that as more and more companies develop programs—particularly pension plans—in line with the leaders, their influence on turnover will decrease.

There's little unanimity on the use of prestige building practices. Parking and cafeteria or restaurant privileges are becoming more popular. Newer, more modern buildings are putting more emphasis on office personnel layouts. A common gripe of many lower echelon engineers in large companies is the "bull-pen atmosphere" in which they must work. "Plush, private offices aren't necessary," comments a Chicago personnel director, "but it's amazing what a few wall partitions to make three and

four-man offices will do for morale."

Recognition—More contact with the cream of middle management is high on the list of wise things to do. Thompson Products Inc., Cleveland, has a conference program which brings "comers" and top management together. Carefully screened employees meet regularly with top executives at a dinner meeting. Bull sessions are encouraged. It gives management a chance to look over the young men. The young men, in turn, develop valuable enthusiasm because of the recognition.

Extracurricular activities, in and out of the company and the employee's field, are important, most personnel men feel. More and more companies are promoting and encouraging employee participation.

Extracurricular—Off-hour training courses given within a company or paid for by the company at neighboring universities keep the employee interested in developing his knowledge and value to the company. Encourage membership in professional societies and attendance at conventions and meetings to show the employee you want him to keep pace with his field. Sending the employee to meetings like those of the American Management Association will help develop his talents and make him a "better company man."

Arthur C. Studt, Hotpoint manager of education and training, believes that helping an employee build strong community ties is a big factor in reducing turnover. Hotpoint encourages participa in social and civic activities. I nually lends a man to the Chi Community Fund for three mo He works for the fund dire generally making solicitation

Other activities Mr. Studt ommends: Chamber of Comm service clubs, executive c Through these activities, the ployee gets into contact with counterpart in other companies industries. In exchanging idea gains good will for himself his company. He develops munity as well as company t factors to consider when thin about changing jobs.

• *Extra copies of this article are ava in quantities from one to three until s is exhausted. Write Editorial Depart* STEEL, *Penton Bldg., Cleveland 1,*

Foremen Need More Power

Survey shows most firms expect line supervisors to handle more problems with less authority

MANY COMPANIES expect their foremen to do the impossible: They are not given the authority to get the results expected of them.

A recent survey of 66 companies by the American Management Association's Supervisory Development Service bears out that situation.

Firms Reply—More than four-fifths of the surveyed firms expect foremen to discipline employees, but less than half permit them to demote or discharge for cause.

Almost all the companies expected the foreman to help workers who have personal problems. Yet about all he can do in most firms is allow time off. Half the companies give the foreman the right to adjust vacation periods; even fewer will let him transfer his men within a department or grant leaves of absence.

Work Planning—Although cited as a key supervisory responsibility, planning usually is on a higher level, most firms admitted. Cost cutting and waste stoppage are problems of foremen, but less than a seventh of the answering firms asked them to keep records of their savings.

In 90 per cent of the companies surveyed, foremen are responsible for the enforcement of safety measures, but only in about three-fourths do they have that authority. About a fifth of the firms let foremen help in safety program planning.

Exception—Employee grievances are the chief exception to the rule of responsibility without authority. About three-fourths of the companies expect foremen to hear grievances and settle them.

More Coal Needed

Anticipated demand by 1975 is 1 billion tons. Industry says taxes hinder expansion

NEW INVESTMENT of $2.8 billion is needed by the bituminous coal industry to meet demands expected in the next 20 years. Problem: It will take nearly 100 years to save this amount from the industry's net profit (based on the latest government statistics).

Suggestion—The National Coal Association, Washington, says the federal tax laws should be revised to permit a bigger depletion allowance (now 10 per cent of the gross income). The association po out that far greater allowance to the oil and gas industries.

Social Security legislation its direct payroll taxes has hit coal industry hard; it has a ratio between labor costs and come. Between 60 and 65 per of the price of coal at the represents labor costs.

Present and Future — Abo ton of coal is used for each to steel made. Over 50 per cen all electrical power is gener from coal. The Paley Commis predicted in 1952, that a huge crease in coal production wil needed: 1. To meet rapidly g ing power needs. 2. To form basis of a synthetic oil and industry as reserves of natural and oil vanish.

At the 1954 rate of use, coal serves will last 2400 years; oil serves, 13.1 years; natural 22.5 years.

Present capacity of the industry is slightly more than the 1 billion tons government e omists expect will be needed. investment capital hesitates cause of low profit rates (in 1 7 cents for each ton mined) low use of capacity. Only million tons were mined last y although this year may see million tons taken out of ground.

panding sales put mechanical packing industries in big business as . . .

Gasket Manufacturers Seek New Materials

ASKETS, packing and seals are ting to be a bigger business ry day.

Eight years ago Neff-Perkins ., Cleveland, started a mainte- nce distributorship with three ople. It branched into manu- turing nonmetallic gaskets. To- y, it employs 98 and has recent- opened another plant in Paines- le, O. Its annual sales volume nped from $100,000 in 1946 to er $1 million this year.

While Neff-Perkins' rapid owth may not be typical of the ole industry, its sales do typify e over-all expansion of the mech- ical packing and sealing busi- ss.

Available Figures—Best guide to dustry activity is an index com- ed by the Mechanical Packing sociation, New York, from quar- ly sales as reported by a repre- tative group of manufacturers. hough this by no means covers the several hundred companies in the field, it does give an accurate estimate of the 25 firms which handle most of the production.

Association figures show a 50 per cent increase since 1945. Sales in the first half of this year ran about 10 per cent better than 1953's. Manufacturers say 1956 will be even better.

Examples—Partial figures show shipments of leather packings, oil and grease retainers and washers rose from $20 million in 1947 to $61.3 million in 1953. Asbestos gasket sales in 1947 totaled $76.9 million. By 1953, sales had reached $115.2 million. No later statistics are available on these products or synthetic rubber, plastic or metal seals—which are becoming increasingly important.

Practically all industries use mechanical packings, but power plants, petroleum, chemical, automotive, metalworking and machinery fields are the big consumers. Most packings, gaskets and seals are sold to original equipment manufacturers.

Materials — Fluorocarbon plastics and silicone rubber are coming into use as sealing and packing materials. Mechanical seals are more in demand because they are practically leakless and cause no wear on rotating shafts.

Problems—Most companies say their troubles are technical: Meeting the exacting requirements which stem from high temperatures and pressures created by atomic energy units and jet engines.

John T. Urwin of Neff-Perkins, reports: "The big problem today is educating our engineers to make them aware of the dozens of new materials being used in the business. We want to find the right material which will do the best job of sealing."

Tool and Die Sales Climbing

IT COULD be better, but, all in all, it will be a good year. That's how tool and die manufacturers view 1955. They're looking for improvement in 1956.

Since trends in the tool and die business generally precede the same kind of movement in other branches of metalworking, another banner year is shaping up for the nation's biggest industry.

Sparkplugs — Supplying impetus to the tool and die pickup are autos, appliances and utilities. The growing atomic industry and new developments in ordnance and missiles offer increasing promise, says John Barth, general manager, Barth Corp., Cleveland.

The contract tool and die industry had its best year in 1953. Defense cutbacks followed, but even so, 1954 was a pretty good year—due mainly to a big first half.

Comeback—A pickup got rolling in March of this year and continues to broaden out. That's why tool and die men think this year will end up close to 1954 volume. Last fall, business was going down; this fall, it's going up.

But the situation varies greatly from area to area, firm to firm. In Cleveland, for example, business for some turned up in March, along with the national trend. Others just felt the upturn in the last two or three months. Most feel like William Warrander, secretary-treasurer, Tools & Gages Inc., who says: "I look for the pickup to continue through the first of the year and beyond."

Building Up—In Detroit the revival is just starting. And area firms are planning on a big one. Automakers are reserving time in the shops, though most contract-letting is still to come. The feeling is that the auto industry has big changes planned for '57. Tooling volume is expected to be heavy. A good sign: Employment, down most of this year, is building up.

Prices are a sore spot. Says one producer: "Prices are still heavily competitive, and we haven't passed along increases. The last year has been one of the worst in the last ten in price cutting. Prices and profits have suffered."

To Come—Indications are for prices to go up soon. "Having absorbed several prior cost increases, it is likely that the industry will pass on the latest cost increases by raising prices about 5 per cent," one executive believes.

Some firms already have taken the step. "Labor and material cost increases two months ago raised our costs about 5 per ce We have raised our prices acco ingly and hope to get the wor says a company president.

Backlogs—Putting the indus in a better position to get prices more in line with increa costs is a small build-up in ba logs that shows signs of conti ing. Helping out: Custom show a tendency to subcontr more of their tooling, says Jero H. Stanek, vice president, Sta Tool & Mfg. Co., Milwaukee.

Customer deliveries are go "We can start on small jobs in week and large jobs in th weeks," says H. Harig, preside Harig Mfg. Corp., Chicago.

Tradition — Across the nat most plants are working m than 40 hours a week even thou business may be down. George Eaton, executive secretary of National Tool & Die Manufact ers Association, puts it this w "1. To get business, shops prom quick delivery; then they have work overtime to make th schedule. 2. The men are used working overtime and like way it builds up their paychec

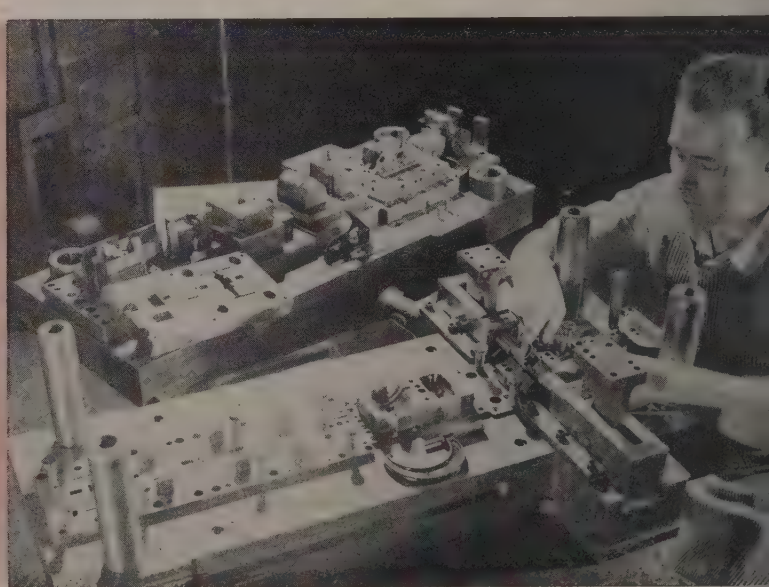
Keeping those men happy is portant. Expert tool and diem ers are scarce in most areas, competition for them is almost keen as it is for orders. Appr tice programs are growing sl ly, but most employers agree t not enough are being trained.

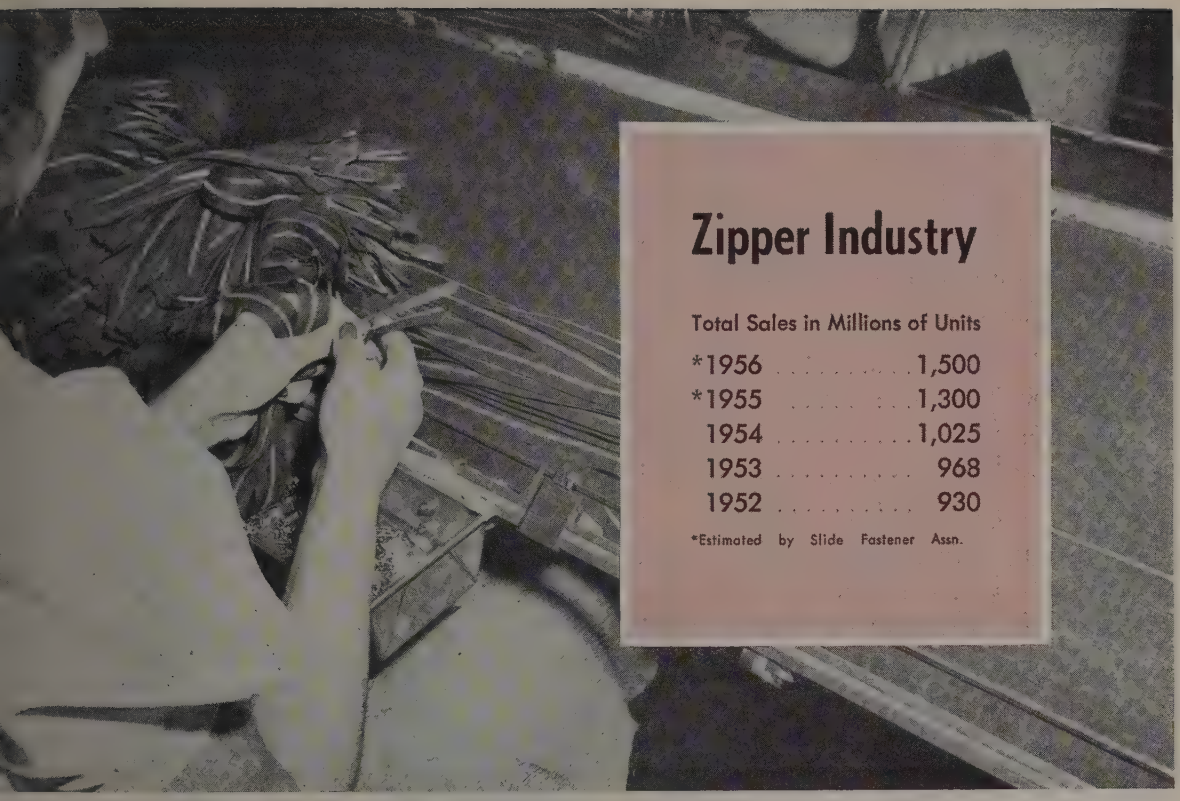
Contract Tool and Die Industry

(billings in millions of dollars)*

1956	$725
1955	690
1954	700
1953	750

*Estimated





pers are inspected frequently to avoid costly replacements

Slide Fasteners Hit Slow Sales Rise

PER SALES slid up this year, it was a tough pull.

Manufacturers of slide fasten- estimate their unit sales vol- e for 1955 will be about 1.3 bil- units ($130 million). In 1954, 25 billion zippers were made. imates for next year run und 1.5 billion.

Price Fight—Although volume increase this year, there has n some price cutting brought by stiff competition.

Some 15 or 20 companies do a nplete job of manufacturing marketing zippers, but there probably 200 firms which as- nble and market components.

Comment — Dwight M. Allgood, cutive director, Slide Fastener sociation, says: "Price fight- is a small facet in the matur- process of the industry. Too ny untested innovations by ffers' in the fastener field have profit margins temporarily." Mr. Allgood adds: "The indus- try probably will be producing at least 2 billion zippers by 1965."

Quality Control—"The big problem in the industry," says Harry Waldes, executive vice president, Waldes Kohinoor Inc., New York, "is maintaining a uniform level of control and precision engineering (tolerances of 0.0001-in.). Combining metal with textiles greatly complicates the problem."

How They Are Made—Zippers work something like a ball-and-socket joint. Cord is sewed to cotton tape at the rate of 3000 stitches per minute, 12 stitches per inch. Simultaneously, wire stock is fed into a "chain" machine which cuts and forms it into "scoops" and "crowns." A chain of "scoops" is clinched on one cord. "Crowns" are clinched to the other.

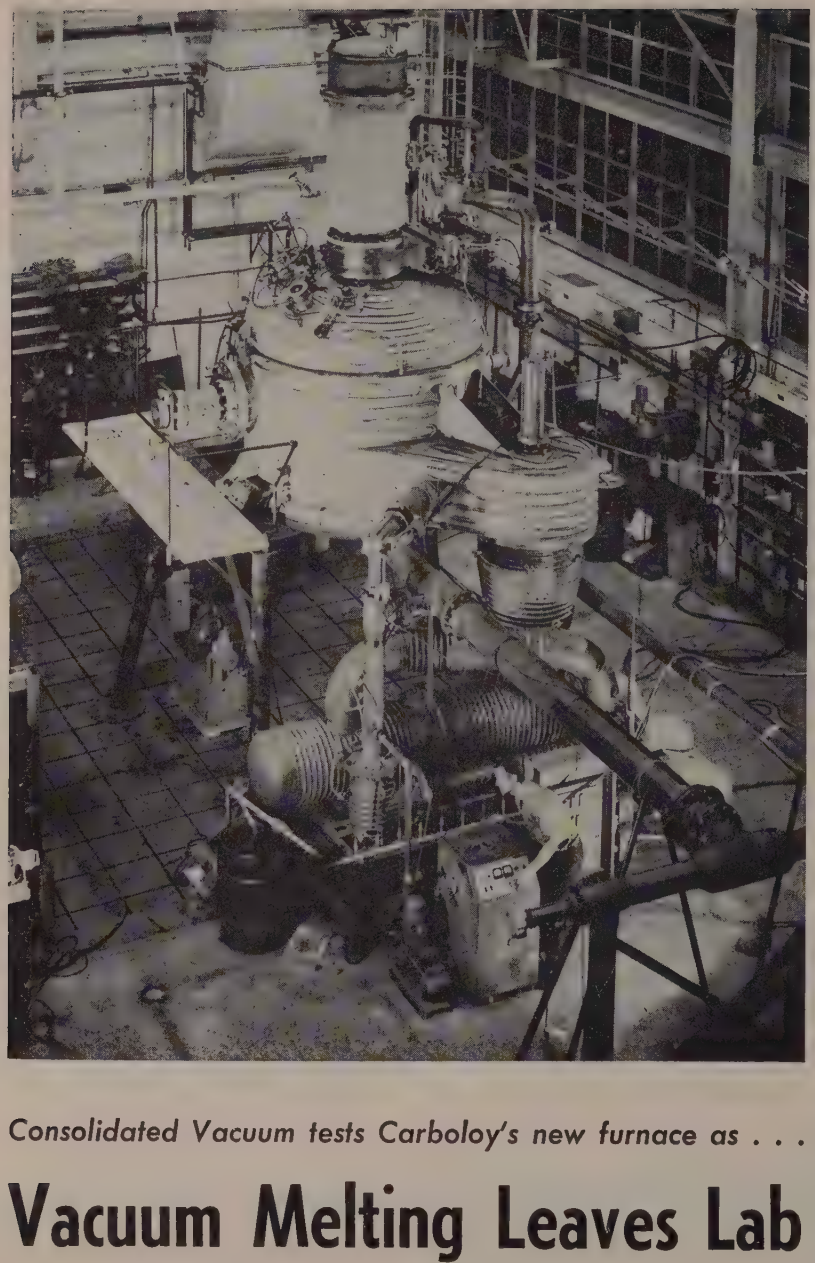
Zipper Nipper—A slider, formed from flat stock, rides along the "scoops." Its diamond-shaped lug holds the "scoops" at a 60-degree angle so the "crowns" will easily lock or unlock into them.

Most fasteners are stamped or formed, but one company diecasts its zippers. Finishes usually are baked on although anodizing and other special finishes are used.

Metals and Plastics — Before 1939, almost all zippers were made of brass. During and since World War II, aluminum has been widely used. Nickel and zinc are other fastener metals. Steel is still being experimented with.

Plastic zippers are no longer popular, but some companies are turning out a nylon fastener which works on a channeled, friction-groove principle.

Markets—Although more than half the zippers made are for the clothing trade, they have other common uses: Vehicle covers, instrument cases, luggage, military equipment, etc. A portable canvas grain bin developed by the Agriculture department is assembled with zippers.



Consolidated Vacuum tests Carboloy's new furnace as . . .

Vacuum Melting Leaves Lab

USES of vacuum-melted steel are climbing. As producers begin to count output in tons rather than pounds, they are meeting accelerating demand from jet aircraft makers and many other industries.

Why melt steel in a vacuum? Consolidated Vacuum Corp., Rochester, N. Y., answers: "The purpose is to provide an environment free of damaging gases; gases liberated during processing of the metal are removed quickly and continuously." The metallurgist introduces his charge to the crucible, melts it and pours ingots without breaking vacuum.

Taking Notice — Vanadium-Alloys Steel Co., Latrobe, Pa., says: "Sales of vacuum-melted metals have shown a constant increase, making necessary the installation of additional equipment." Its association with the Carboloy Department of General Electric Co., manufacturer of vacuum-melted steels, is typical of the growing interest as steelmakers watch the process come out of the laboratory.

Vacuum melting took a major step in December, 1954, when Utica Drop Forge & Tool Corp. installed two 1000-lb furnaces at its New York Mills, N. Y. plant. In May of this year Carboloy installe 1000-lb furnace at Detroit. ports Consolidated Vacuum: "T is the first commercial type, s continuous, high-vacuum melt and casting furnace installati

Early Birds—In 1954, Cruc Steel Co. of America, Pittsbu joined with National Resea Corp., Cambridge, Mass., to f Vacuum Metals Corp. Anot steelmaker, Universal - Cycl Steel Corp., Bridgeville, Pa., a 1000-lb furnace in operation.

While researchers understood principles 50 years ago, vacu melting of steel had to wait u modern applications demanded on a production basis. Vacu melted metals are available as h rolled or cold-drawn bars, w forgings, sheet and plate.

New Metals — Vacuum melt proponents say they can give c tomers metals alloyed with siza percentages of titanium and conium—an impossibility with c ventional open hearth or elec furnace practice.

W. B. Pierce, vice president technical director, Allegheny L lum Steel Corp., Pittsburgh, c ments: "There's concrete evide that vacuum melting improves high-temperature properties the cleanliness of most alloys."

Aid to Designers — Carbo sums up advantages of its Cons dated Vacuum furnace: "Our n pilot production unit will give signers more leeway in select better materials for advanced velopment work. It will make p sible the creation of entirely n alloys from lower-cost, less-c ical elements of equal or bet structural properties than th produced by air melting."

Researchers at Utica D Forge add: "Certain charact istics, like fatigue strength bearing steels, have been proved by vacuum melting. T stress rupture life of turbine bla made by vacuum melting is least twice as good as that of c ventional types." A user of v uum - processed, high - chromi stainless steel alloy finds imp strength is increased 50 to 1 o the air-melted alloy.

Here—The most immediate n for these improved properties is

aft. A supplier of bearings
nigh-temperature aircraft ap-
tions took advantage of them
cut its rejection rate from 20
per cent.

es are constantly expanding,
out Vanadium-Alloys of-
s. Many parts requiring high
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electronics.

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ol for research and develop-
, vacuum melting comes under
asing study at such firms as
npson Products Inc. and Al-
Precision Casting Co. in
eland and Westinghouse Elec-
Corp. in Pittsburgh.

owth Curve—While some pro-
rs expect a slow, steady
th in applications, others pre-
a sales explosion. That's a
ict possibility if a large pro-
on of tool steel users start
nding the metal, or if air-
applications continue to soar.
is creates a knotty problem for
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e up capital in equipment for
y's needs which might not
demands five years hence.
difficulty is solved in part,
Consolidated Vacuum engi-
have designed a furnace
h can be expanded in capac-
t relatively low cost.

ture Expansion—Last year,
um metal production was es-
ted at 20 to 25 tons a month.
llations in 1955 have boosted
ut to about 100 tons a month.
is well below capacity. One
r producer concentrates so
ly in research that it op-
s at only 40 per cent of its
tial. More capacity is com-
At least two firms will an-
ce expansion programs with-
e next month.

Taconite Production Rolls

With the first of 12 sections ready to go, Reserve Mining Co. starts commercial pellet output at its E. W. Davis Works in Silver Bay, Minn.

ANNUAL capacity of 3,375,000 long tons of iron ore pellets is going in at the Davis works of Reserve Mining Co.

The first of 12 sections was started up at the taconite plant last week. Operating experience gained will be put into practice as the remaining sections are completed during the next three or four months.

When Completed — Output will be shipped to blast furnaces of Republic Steel Corp. and Armco Steel Corp., joint owners of the $190-million project.

It's doubtful if any pellets can be sent down the lakes this shipping season. Operation of the processing plant will be on a year-round basis, with the pellets being stockpiled during the winter.

Preliminary—Tests in the concentrating plant have been good. Reserve Mining had expected more than normal problems in starting taconite production on a large scale. But W. M. Kelley, president of Reserve Mining, reports problems have been few and relatively minor.

Not Finished — Major work ahead includes a concentrating building for grinding, magnetic separation and filtering; the pelletizing plant where taconite concentrate will be rolled into balls and burned hard to make finished pellets; an ore bridge and other loading facilities.

Armco Steel Boosts Expansion

Armco Steel Corp., Middletown, O., is stepping up its 1955 expansion program from $60 million to $111 million.

President W. W. Sebald announced that his firm's capacity will be 6.1 million tons by early 1957—an increase of nearly 25 per cent.

While a relatively large portion of the $111 million will go for steel capacity, major additions also will be made to rolling and finishing facilities. Among them will be a new strip mill at Butler, Pa. Several rolling mills will be revamped.

Copperweld Steel to Expand

Copperweld Steel Co., Pittsburgh, is ready to finance a $12-million modernization and expansion program aimed at completion in 1957.

Look for more taconite piles like this as Reserve Mining boosts production

Senate subcommittee urges action on U.S. manganese as . . .

Purchase Program Fades

SEN. JAMES E. MURRAY's Materials and Fuels subcommittee has issued a strong recommendation for immediate action on domestic manganese production.

Its report states:

"To maintain a realistic domestic mobilization base in manganese, continuing purchase programs at adequate prices are warranted; and plants to process the ores should be built as soon as possible."

Reasons—In the subcommittee's opinion the federal purchase of large quantities of low-grade manganese ores has been fully justified. It points out that the material can be beneficiated; national defense makes it imperative that this nation have sufficient stored reserves; and it is necessary that the U. S. have a continuously operating manganese industry.

The report explains that too much time has been wasted in "experimental dilly-dallying" with the processing of low-grade manganese reserves. "The time has arrived," recommends the report, "to do adequate pilot-plant work with a view to building full-scale plants to upgrade the presently stored low-grade ores. Such plants should be privately operated, but should have Bureau of Mines supervision."

History — The government's manganese purchase program originally started during World War II, ended in 1945 and was reinstituted under the Defense Production Act of 1950. Under 1950 provisions, quotas were set up for purchasing depots. One purchase depot is already closed, having reached its assigned quota.

The Bureau of Mines spent some $7 million from 1947 through fiscal 1955 on studies pertaining to manganese deposits and beneficiation. The subcommittee report states: "Year after year, research continues until it almost begins to appear that it is research for the sake of research alone. The Bureau of Mines has failed to come up with any constructive over-all plan or program in respect to manganese." The subcommittee's strongest recommendations: 1. Start pilot-plant work now. 2. Build full-scale plants as soon as possible. 3. Keep quotas open for buying low-grade manganese ores.

More Mobilization Plans

Air Force officials are talking about two policies which will improve industry's readiness for mobilization and reduce lead time in aircraft production.

Although details are sketchy, the plans have fancy titles: "duction Acceleration Capa Concept" aims at helping m facturers prepare to boost production rapidly in emerge "Production Compression Con is a squeeze play set up to aircraft companies hit maxi output during a 30, 60 or 9 period.

The first plan would be where production limitations based on material shortages. second is to be applied on stra and air defense systems.

Meet William J. Jones: Newly appointed director of the Automotive Division, Business & Defense Services Administration.

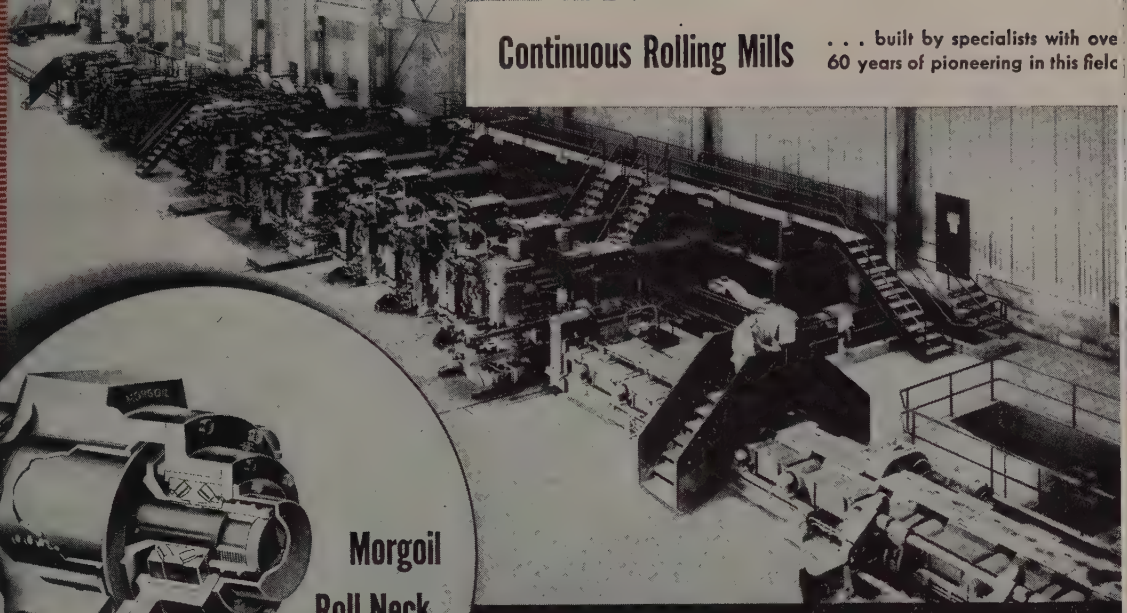
Mr. Jones is on loan to BDSA from his position as assistant general production manager of Chrysler Corp. He has been in the automotive industry for 31 years.

Here and There

Congressional trust busters a beady eye on the automotiv dustry. They've been studying tionnaires, listening to testi on automobile marketing and ing and checking over the anti laws. Next year's target are parently will be Detroit, with eral Motors Corp. up for a pot investigation . . . Disaster and damage insurance sponsored b government will probably en as a $1.5-to-$2-billion progra be tried out over a three-year od. A Senate Banking Comm staff study bases these figur the amount of damage done b recent hurricane and floods i Northeast. Unsolved pro Lack of response to this and suggestions by private insu groups . . . The Reclamatio reau will call for bids on ap mately $51 million in major struction projects by next Projects will include two co and two earth storage dams, power plants, one diversion one diversion tunnel and a p ing plant . . . Gen. Thoma White, Air Force chief of reports the Air Force will h nuclear-powered bomber in t "sometime within the next dec He adds the guided missiles c a lot, but they never will pletely replace manned aircra The Congressional Joint Eco Subcommittee opens public ing (Oct. 14-28) on proble automation and technologica velopment. Rep. Wright Pa will hear the views of top leaders and businessmen.

Continuous Rolling Mills

. . . built by specialists with ove
60 years of pioneering in this fielc



Morgoil Roll Neck Bearings

. . . will increase the accuracy of your product and save on operating and maintenance costs.

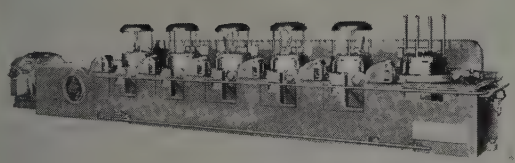
MORGAN WORCESTER

Can help you produce more and better steel products

G-2

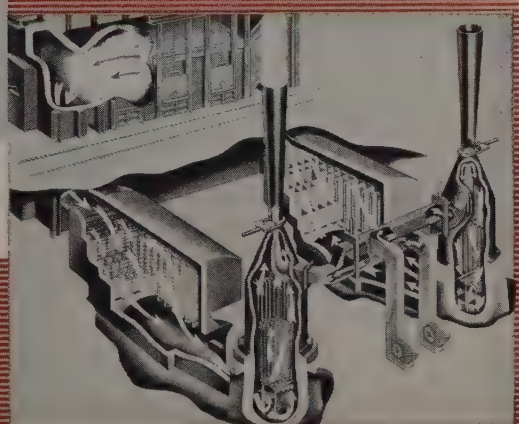
n Ejectors

handle hot gases high as 3000° F.



Wire Machines

. . . Morgan-Connors give high production, with low die cost, low power cost, low space requirement.



Furnace Control System

. . . Morgan-Isley increases efficiency of any regenerative furnace at relatively low installed cost.

MORGAN CONSTRUCTION CO.
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Rolling Mills - Morgoil Bearings - Wire Mills
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A NEAT WAY TO PLAY SAFE
JAL-TREAD FLOOR PLATE

Jal-Tread floor plate combines the strength and durability of high quality steel with a neat, distinctive checkerboard pattern scientifically designed for *safety*.

Whatever your application . . . in new construction . . . new equipment . . . or replacement jobs, Jal-Tread will assure you of these advantages:

Safe Footing—300 miniature squares per square foot—all of uniform height—provide maximum linear friction surface that protects you against lost-time accidents.

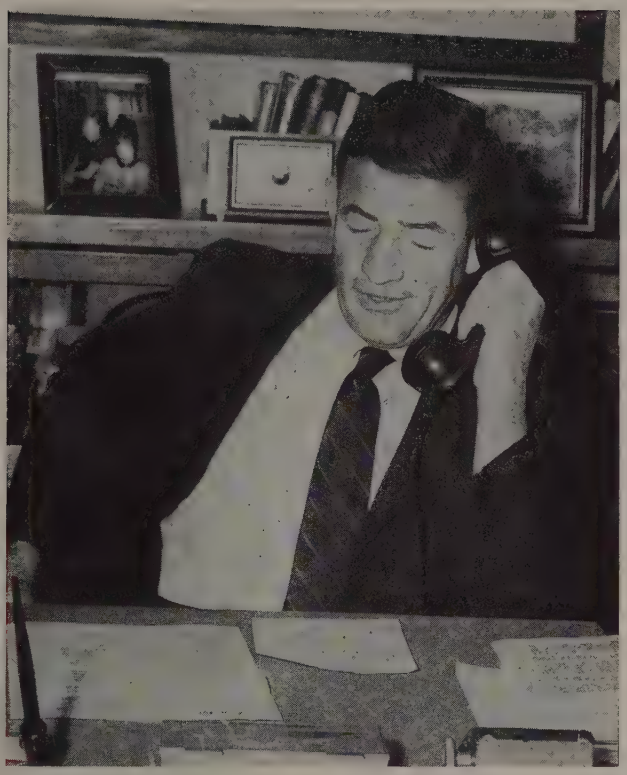
Easy Fabrication—The Jal-Tread straight line pattern simplifies welding, flanging, shearing, bending, punching, and drilling operations. Experience shows that Jal-Tread cold-formed on standard plate bending machines.

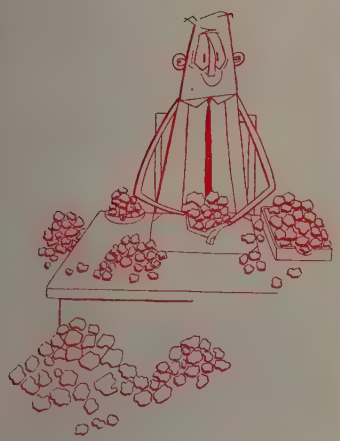
Easy Cleaning—The Jal-Tread straight line gutter patte mits quick, thorough sweeping and draining in any di

For safe, long-lasting flooring always specify J&L Ja . . . *it's available at leading distributors everywhere.*

Jones & Laughli

STEEL CORPORATION — *Pittsbur*





Cliffs' J. S. Wilbur: Ore Specialist

HE'S A SALES vice president with a prospect list of less than 35 buyers in the U.S. and Canada for his major product—a product that accounts for the overwhelming bulk of his company's sales.

In this age of industrial diversification, that situation would seem to cry for more product lines to generate more sales opportunities.

Does It?—"Not at all," says John S. Wilbur, vice president-sales for Cleveland-Cliffs Iron Co. He points out that Cliffs is actually going in the opposite direction; it withdrew from most of its coal business a year ago to concentrate more on iron ore production and development. "For our problems," says he, "specialization, not diversification, appears to be the solution." Concentrating on iron ore in 1955, Cliffs will have record ore sales.

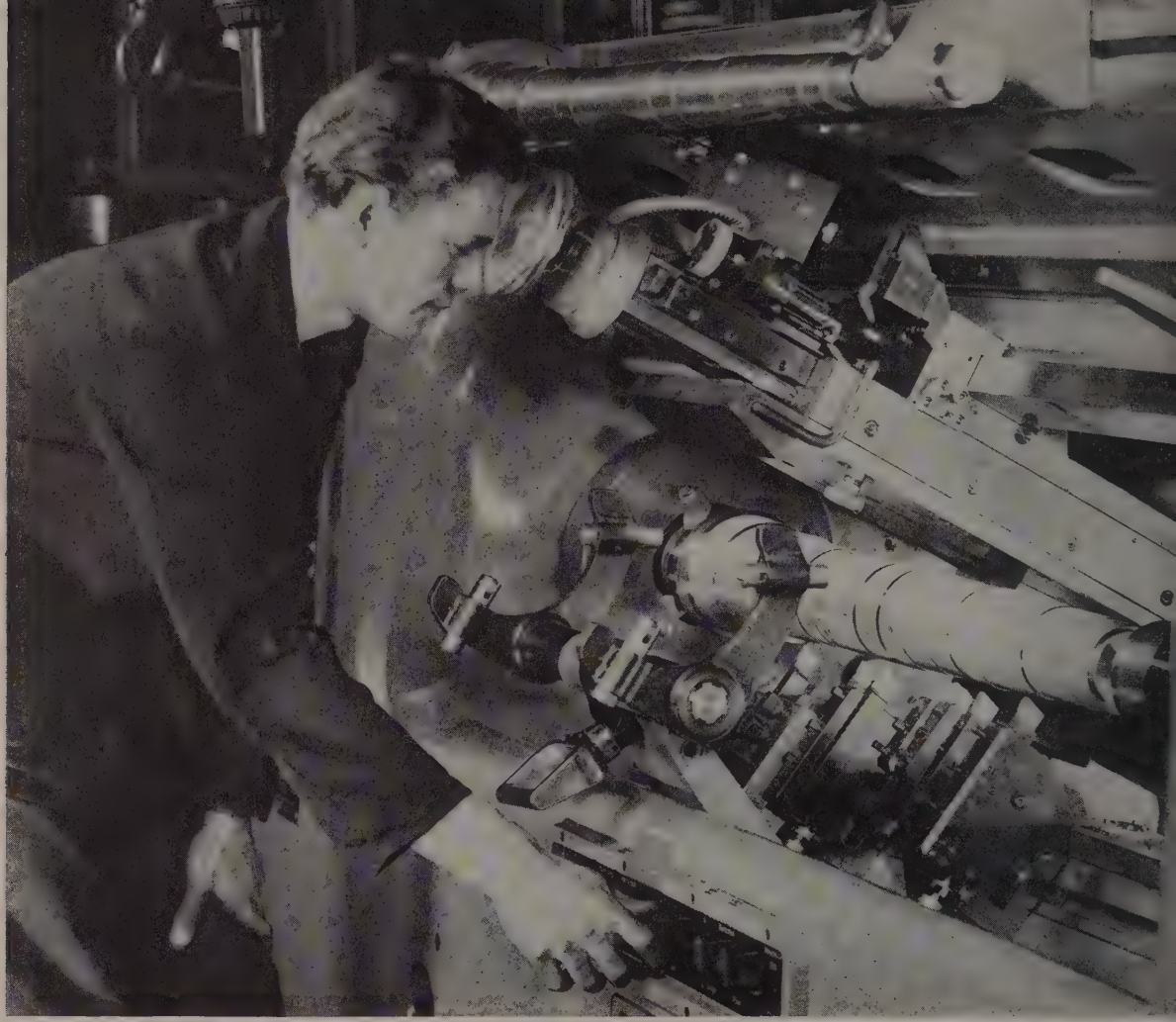
Only about 35 companies in the U.S. and Canada operate blast furnaces and are buyers of iron ore. Some mine their own ore and are out of the open market. Some are too far away from Cliffs' mines to be purchasers.

Peak Season—Although the Lake Superior shipping season is drawing to a close, the peak of the selling year is just starting. "We try to line up our contracts in late fall and winter," says Mr. Wilbur. The bulk of Cliffs sales are handled on long-term contracts that run several years. Many don't provide for specific tonnage deliveries but call for the ore company to deliver the raw material in proportion to the buyer's consuming rate, with minimum levels.

A big part of Mr. Wilbur's job is to forecast steel industry production. His prediction now: Mills will operate at present levels of 90 per cent of capacity or better through the first quarter of 1956. After that, there could be moderate declines.

Future—Prospects for the steel industry are excellent . . . not only for the few months ahead but for the coming years, says Mr. Wilbur. "Cliffs has been in business since 1850. By concentrating on mining, preparing and shipping quality ore, we expect to be in business for at least another 105 years."

Iron ore specialist Wilbur wasn't always wedded to that raw material. He started out, after being graduated from Yale in 1933, as a salesman for Electro Metallurgical Co., division of Union Carbide & Carbon Co. He joined Cliffs in 1940, took time out for Army service from 1941 to 1945 and became a Cliffs vice president in 1952. He and Mrs. Wilbur have three daughters and a son.



Heavy-duty streamlined copying lathe built by Heidenreich Harbeck is powered with 40-hp motor for 2½-in. carbide t

There's not much yet, but you can expect . . .

More Automation in Germany

AT UNTERTURKHEIM outside Stuttgart in West Germany, Daimler-Benz A.G. has a big plant for manufacturing parts and subassemblies for the Mercedes 180.

A half dozen parallel lines of machine tools perform a sequence of operations on engine, transmission and differential parts that are fed into a pair of assembly lines.

Most machine tools are of the single-purpose type brought in after the war to get production going as quickly as possible. Now, some of these machines are being pulled out and replaced with completely automated operations.

For Instance — Ludwigsburger Maschinbau GmbH, Ludwigsburg, has installed a line that performs 18 operations, including boring, milling, drilling, tapping and facing, on each half of the rear axle housing.

Elsewhere in German industry, where volume of production warrants automated lines, single automatic machines and conveyor-line assembly methods are moving in. However, as yet there's not the same incentive to go automatic as in the U. S.

Difference — The difference is aptly expressed by Dr. H. C. Boden, president of AEG which has 100,000 employees and products about paralleling those of General Electric and Westinghouse. "We apply more labor less material. In the U. S. talk more about labor-saving chinery."

The machine industry is exc ingly active with 3784 compa —1190 employ more than workers; 340 employ more t 500. Its 660,000 workers turn $3 billion in equipment a year which 40 per cent is exported.

Machine tools comprise the gest segment, with 65,000 w ers employed by 900 firms. duction is at the annual rate $250 million. Half goes abroa

Promotion—Most of the Ger equipment builders are organi into the Verein Deutscher

hinenbau-Anstalten, or Associa-n of German Machinery Manu-cturers, with headquarters in sseldorf-Oberkassel. This group sembles statistics, handles trade ows and gets out a thick buyer's ide in German, English, French d Spanish. Helmuth Vollrath VDMA says machine tool order cklogs range from 12 to 18 nths and are expanding.

Schiess A.G.—Founded in 1866 Ernst Schiess, this company came one of the largest build-s of heavy machines in Germany, cluding planers, horizontal bor-g mills and large hobbers.

At the end of the war, 80 per nt of its production equipment s shipped to Russia, 15 per cent Yugoslavia and 5 per cent to bania.

Schiess now employs 3000 work-s on two shifts, of which 1200 e on machine tools. Of $22 mil-n annual sales, two-thirds are machine tools. Half the tool tput is exported. On a $1.7 mil-n order for Spain, 45-year credit s arranged.

Willi Wallrodt, director, says rman custom-built machine tools ll at about 20 to 30 per cent der U. S. prices but differentials assembly line tools are smaller. hiess had a license from Jones Lamson for a semiautomatic the. Giddings & Lewis is inter-ted in Schiess' double column ring mill and Schiess in G & L's rizontal boring mill. Schiess ilds textile machines to Sacco-Lowell designs for Europe.

Schiess is going after a share of the American market. Kurt Orban Co., New York, is for sales; American Schiess Corp., Pittsburgh, is for service.

Heidenreich & Harbeck — Along with a large portion of Hamburg's industry, Heidenreich & Harbeck's plant was damaged in the war.

Enough equipment was dug out of the ruins to resume production with textile spinning machines in 1948 when it still was uncertain whether machine tools could be built.

H. & H. employs 2200 men in making its own castings and parts for a line of standard and automatic lathes.

One automatic copying lathe handles work up to 40 in. long and 10 in. in diameter. A saddle-type turret lathe is designed for punch-card preselector programming.

Pee-Wee—In West Berlin, Pee-Wee Maschinen und Apparatebau is still digging out ruined sections of its plant to expand production.

Pee-Wee developed a machine for rolling speedometer gears for Daimler-Benz, Volkswagen and Austin of England. Another machine rolls truck driveshaft splines in 20 seconds that would require a half hour by hobbing, says Engineer W. Moeltzner.

Heavy Equipment—Schloemann A. G. has 400 designers and engineers at work in its new building in downtown Dusseldorf on rolling mill and press equipment. President Bernhard Knapp says his company is especially competitive in selling tailormade equipment for mills in Europe, South America and Japan.

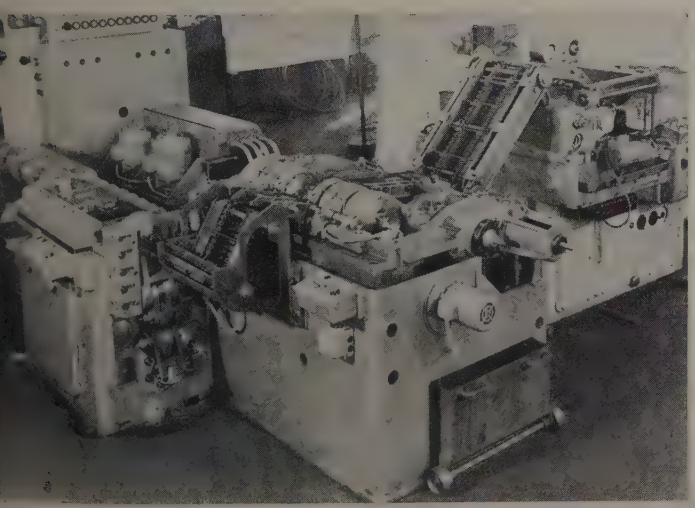
Under the U. S. Air Force Heavy Press Program, Schloemann built a 14,000-ton extrusion press for Alcoa at Lafayette, Ind. The press handles billets from 15¼ to 29¼-in. in diameter and up to 72 in. long. Alcoa's Los Angeles plant will get a 7000-ton Schloemann forging press. Feller Engineering Co., Pittsburgh, represents Schloemann in the U. S.

Demag and Mannesmann are large builders of steel mill and related equipment for both the home and export market. Demag has the subcontract from Krupp for a mill in Pakistan.

Materials Handling — German plants use overhead cranes, hoists, some powered conveyors and obsolete caster-wheeled hand trucks. A few monorail conveyors are used. One steel company plans a 40-ton installation. Power lift trucks aren't used much.

Report on Europe

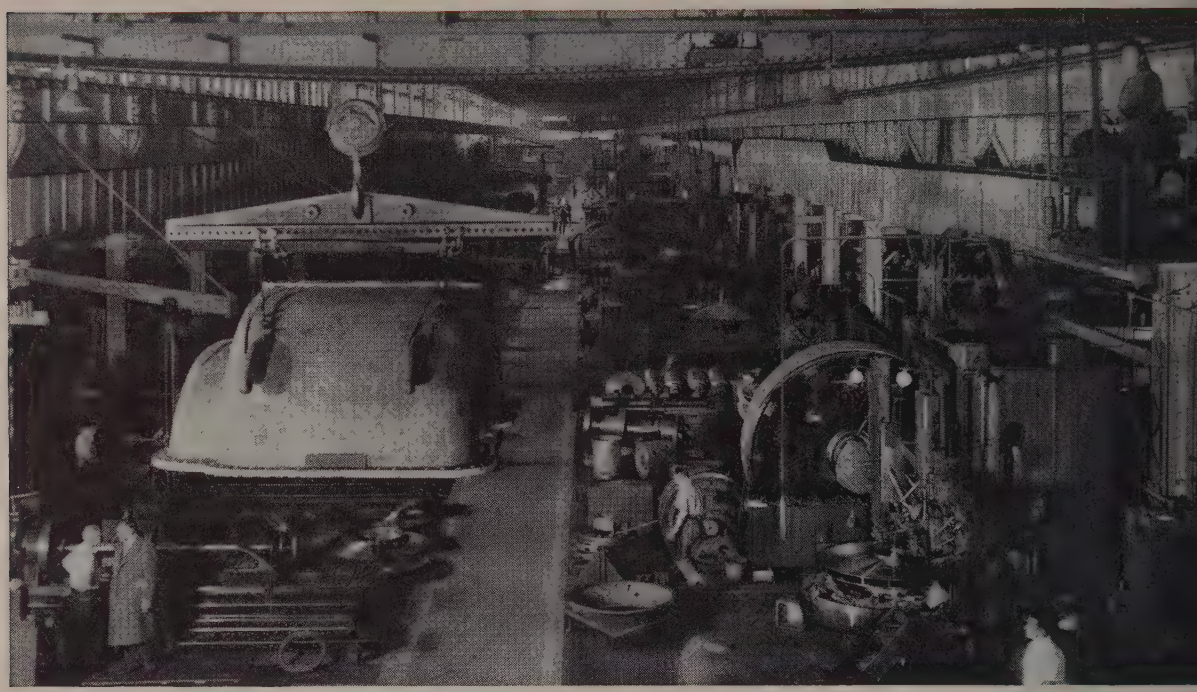
Back from a six-week tour of West Europe, STEEL's editor, Irwin H. Such, reports his findings in this article, the seventh of a series.



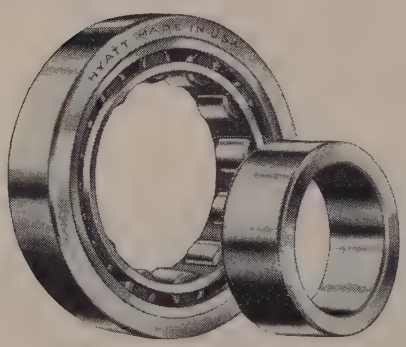
oiled steel is straightened, drawn to size, cut into lengths, threaded nd formed into U-bolts in machine developed by Pee-Wee in West Berlin

Automated line machines cylinder heads for the Mercedes 180 at Daimler-Benz plant in Germany

HOW PRODUCTION WILL CLIMB IN YOUR PLANT



when you hand the heavy loads to HYATTS



THINGS RUN SMOOTHER
LONGER ON

Keeping production curving upward—*and keeping costs in line*—is one of your primary interests as a management man. And here, again, is where HYATTS can help you!

HYATTS' phenomenal ability to "take it" results in significantly longer life expectancy—and hence *greater utilization of equipment with lower maintenance costs*—than "run-of-the-mill" roller bearings can possibly provide. Why? Because right at the outset, HYATT selects the choicest steels from America's foremost producers, instead of depending on a single limited source. Then these premium steels are heat-treated, machined, formed and inspected with fantastic precision on the finest equipment money can buy. And from drawing board to final installation recommendations, you profit from the fact that HYATT has more roller bearing engineering know-how than anyone else in the business.

That's why it's *good business* on your part to see that if HYATTS aren't already being specified for roller bearing replacements in your plant today, they *will* be from tomorrow on. By preventing bearing-failure bottlenecks, HYATTS can give your production curve a surprising lift—*at the same time they're saving you a surprising lot of money!*

HYATT ROLLER BEARINGS

STRAIGHT ▭ BARREL ▭ TAPER ▭

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

ew parts, metals, processes in this Chrysler and other 1956 cars hint . . .

Revolution Pops in Materials, Methods

OME AUTOMAKER metallur-sts and materials engineers are ginning to wonder if they are ilding today's cars too well.

Don't misinterpret that state-ent. Engineers don't want your r to break down. They spend enty of hours and money to in-re its reliability and longer serv-e life. But there's a growing ift in the problems of materials d methods that's beginning to ake them wonder if your car isn't erengineered in some depart-ents.

Switch—Here's how one metal-rgist expressed the problem to EEL last week: "We used to end most of our time handling rvice failures. Parts that let go the field were analyzed to find t why, and frequently our speci-ations were changed accordingly. Now, we seldom get a part which has failed in service; if we do, almost invariably it is one which did not meet our specifications, and we send the problem back to manufacturing."

Automakers feel they have established the fact that they can build reliable cars. The thought that anything made better than it needs to be costs more than it needs to cost is bringing about a re-examination of methods and materials to squeeze out still more costs. The appraisal is becoming a major factor in the competitive battle. For many auto companies, a thorough program of parts re-evaluation is looming larger on the agenda than ever before.

Steel—One growing factor in the materials picture, for example, is low carbon steel. Occasionally, improved heat-treating techniques are the key to quality and service life which could not previously be achieved. Shifting functions of parts, too, are entering the picture. Bumpers which used to be considered a defense in collisions are recognized as primarily useful in parking skirmishes. Moreover, they are becoming a major part of the style picture, which means that formability is increasingly significant. Although they will dent, low carbon steel bumpers will be on more cars than ever in 1957.

A good example of low carbon in a mechanical part is Chrysler Corp.'s PowerFlite transmission countershaft. Formerly 4024, this part is replaced with 1024, thanks to improved heat treating which reduces distortion and permits holding closer tolerances. Tests

with ammonium carbonitriding indicate that similar changes in other parts may be coming.

Method—Another Chrysler Corp. part of interest is an aluminum pinion carrier in the same transmission. Produced as a diecasting, this part markedly reduces machining operations with no loss in function over the previous ferrous part. Packard is using a diecast transmission case.

Another fabrication technique which can be used with increasing scope on aluminum is impact extrusion. One metallurgist advises watching this method closely. Chrysler is going to an impact extruded torque reaction shaft in its PowerFlite.

Aluminum—Other impact extrusions used by Chrysler include wheel brake cylinder pistons, spark plug protector tubes and a variety of power steering unit components. Watch for aluminum, too, to increase as decorative trim. Cadillac in 1957 offers aluminum grilles and forged aluminum wheels in matching anodized finish. Not only is stainless steel used for many trim parts expensive, but stylists figure the "aluminum" look is highly desirable in the trend to aircraft-like styling motifs. A 5-to-10-lb-per-car increase in 1956 model consumption of aluminum should be eclipsed by an even greater hike in 1957—and automakers consider aluminum as being in short supply.

Typical of the competition aluminum faces is pearlitic malleable, which, in turn, is often a substitute for forgings. One GM division is reported shifting to shell molded pearlitic malleable camshafts and crankshafts in 1957 in a bid to reduce machining. One example of the speed with which changes are being made and the trend toward reexamination of familiar processes is a camshaft thrust plate of one manufacturer. A short time ago it was a forging, then a carbo-nitride hardened stamping. Now it's a gray iron casting.

Economics — Switches like that make it difficult to predict just what direction any specific part will take. Compounding the problem is the fact that automakers already have facilities which cost money and are not depreciated. A shell-molded crankshaft may look fine, but if you have forging facilities, savings must: 1. Pay for new shell-molding equipment. 2. Pay for scrapping the forge shop.

Plastics and rubber are growing in auto applications. Water pump impellers, for example, are cast in phenolic material on the Big Three products. Dodge is reported ready to offer nylon kingpin bushings which will not require lubrication, replacing present bronze bushings. Plastic foam is getting a close look by many manufacturers as a seat padding material which could substantially reduce the need for springs beneath it. A Saran fabric fuel filter is used by Chrysler Corp., replacing a powdered metal unit.

Examples — A rubber parking lamp housing is being supplied to an automaker which combines in one unit the sealing, insulation and lamp housing function. It offers substantial savings over the stamping assembly and rubber fittings used before. Polyethylene and nylon clips are being used to attach some body trim, providing a fastening device and a seal. A big possibility in the near future is plastic body solder, replacing the costly lead used to fill body joints and form contours betw panels.

Perhaps more than any sin industry, the automakers run spectrum of materials and me ods. As they re-evaluate th ways of doing things, metalwo ing undoubtedly will feel the pact strongly. Some will ben from ideas they can use on th own products; others will find creasing need to speed up th own process re-evaluation to main strong as auto industry s pliers.

Exhaust Notes

New Rambler production fa ities went into operation last w at American Motors' Kenos Wis., plant. Expanding product capacity of these cars by 60 cent, the facilities include a se rate final assembly line, new s assembly and feeder lines and inspection and testing facilit Conveyor systems were enlarg welding capacity was increa and additional painting equipm was installed. Incidentally, R bler bodies and sheet metal painted as a unit similar in proach to the new Chrysler tem, eliminating fender storage simplifying multitone combi tions. Overhead conveyors ca bodies from the time they le storage until they are set d on their own wheels.

Volkswagen representatives already contacting suppliers in country to get components w its new plant goes into opera at New Brunswick, N. J. The f cylinder engine and other b parts will continue to be mad Germany, then assembled in country, but parts which can made economically in this cou will be. Suppliers of some c modities already contacted re the Germans are insisting on usual standards—alloy purity decorative parts, for example. sales in this country should 25,000 in 1955, incidentally, c pared with about 8000 Metro tans.

With the 1956 DeSoto being nounced today, Chrysler has full line of 1956 cars on the except for Plymouth.

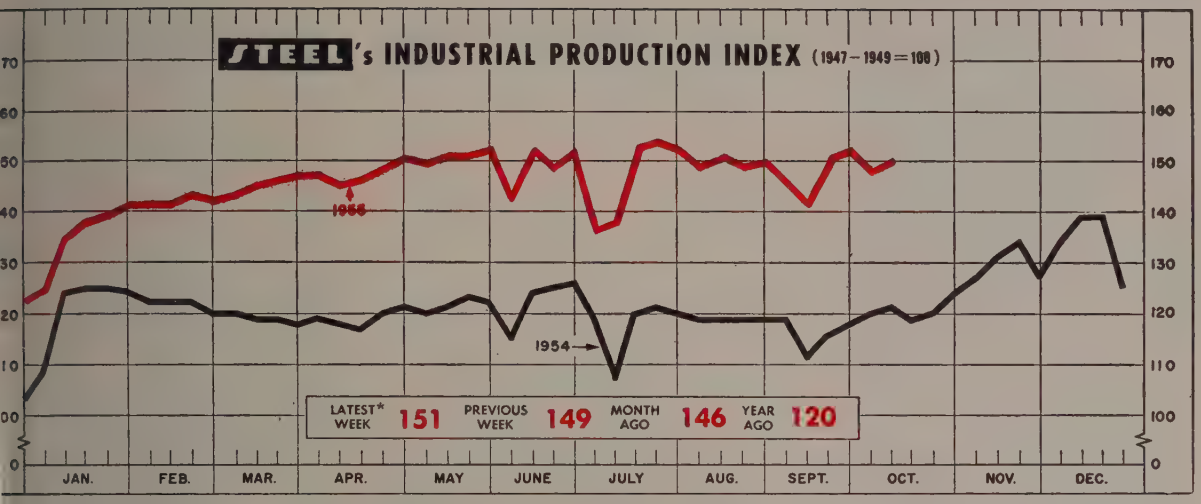
Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,530	574,215
March	955,027	672,858
April	936,994	676,269
May	913,257	621,318
June	825,031	635,540
July	815,324	543,344
August	736,039	523,799
September	567,703†	364,441
October		312,078
November		616,395
December		761,954
Total		6,896,678

Week Ended	1955	1954
Sept. 10	98,546	84,743
Sept. 17	146,484	74,026
Sept. 24	151,804	72,804
Oct. 1	144,534	84,110
Oct. 8	102,298†	81,610
Oct. 15	110,000*	59,511

†Preliminary *Estimated by STEEL
Source: *Ward's Automotive Reports*



eek ended Oct. 8. Based upon and weighted as follows: Steel Output, 35%; Electric Power Output, 32%; Freight Car Loadings, 22%; and Auto Assemblies, 11%

Construction Steamrollers to New Highs

'ENDING last month for new ilding sailed over the $4-billion ark for the first time, topping off e biggest third quarter and best st nine months the construction siness has ever had.

Outlook for fourth quarter: wn from last quarter's $11.9 lion, mostly because of the in- stry's usual cold weather slack- —but still good enough to push nstruction spending for the year er $41 billion. That will be al- st 10 per cent better than last ar's all-time high of $37.6 bil- n.

Gains Ahead — Total spending is year is $31.1 billion, 12 per nt higher than at this time a ar ago. That means construc- n outlays in the fourth quarter close to $10 billion, if predic- ns for the year are going to be held.

For 1956, the experts already e forecasting new records— out 5 per cent up from the 1955 al. A catch: About half the in will come from increased sts of labor and materials.

New Plants—One of the bright- facets in this year's building ture is industrial construction. ptember spending hit $210 mil- n (the best month ever) and sted outlays for the year 15 ' cent higher than a year ago.

Another gainer is commercial building, 35 per cent ahead of last year so far. Both industrial and commercial outlays reflect businessmen's confidence that good times are ahead, and those categories are expected to play a big role in setting a new construction spending record next year.

Houses Dip—They'll have to. Housing is expected to fall off from 1.3 million this year to about 1.2 million. Being blamed: Tighter credit.

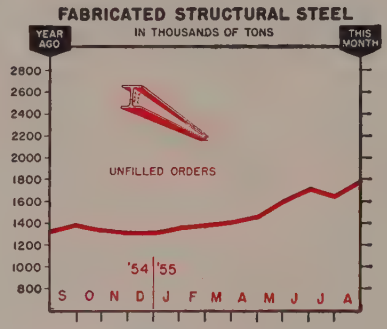
F. W. Dodge Corp. says: "Tightened housing credit showed definite results in reduced residential building contract volume in September. For the first time since December, 1953, Dodge's monthly

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,350[1]	2,334	1,735
Electric Power Distributed (million kw-hr)	10,750[1]	10,627	9,158
Bitum. Coal Output (1000 tons)	9,575	9,630	8,116
Petroleum Production (daily avg—1000 bbl)	6,670[1]	6,661	6,145
Construction Volume (*ENR*—millions)	$465	$266	$193
Automobile, Truck Output (*Ward's*—units)	102,298[1]	144,534	81,610
TRADE			
Freight Car Loadings (1000 cars)	815[1]	820	722
Business Failures (Dun & Bradstreet, no.)	185[1]	186	192
Currency in Circulation (millions)[3]	$30,428	$30,323	$30,051
Dept. Store Sales (changes from year ago)[3]	+15%	+3%	−2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,104	$20,317	$20,962
Federal Gross Debt (billions)	$277,524	$278,352	$274,838
Bond Volume, NYSE (millions)	$20,954	$37,455	$15,338
Stocks Sales, NYSE (thousands of shares)	10,513	21,693	10,788
Loans and Investments (billions)[4]	$84,503	$84,516	$83,222
U. S. Govt. Obligations Held (billions)[4]	$30,347	$30,546	$35,696
PRICES			
STEEL's Finished Steel Price Index[5]	208.97	207.63	194.53
STEEL's Nonferrous Metal Price Index[6]	279.9	262.3	218.9
All Commodities[7]	111.1	111.4	109.7
Commodities Other than Farm & Foods[7]	118.0	118.0	114.5

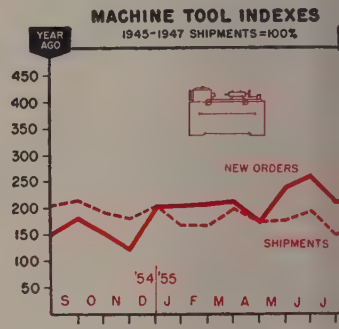
*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100

THE BUSINESS TREND



	Shipments 1955	Shipments 1954	Backlogs 1955	Backlogs 1954
Jan.	225.8	245.6	1,346	1,686
Feb.	213.4	253.1	1,360	1,697
Mar.	227.8	285.4	1,392	1,645
Apr.	239.7	293.5	1,444	1,566
May	223.2	253.9	1,592	1,490
June	282.3	290.3	1,706	1,391
July	219.4	265.2	1,639	1,429
Aug.	266.7	272.5	1,776	1,270
Sept.	....	265.4	....	1,329
Oct.	....	258.4	....	1,294
Nov.	....	228.7	....	1,280
Dec.	....	223.5	....	1,281
Total	....	3,135.5		

American Institute of Steel Construction
Charts copyrighted, 1955, STEEL



	New Orders 1955	New Orders 1954	Shipments 1955	Shipments 19
Jan.	203.0	173.5	167.3	31
Feb.	209.4	159.8	168.2	32
Mar.	214.6	169.6	202.5	32
Apr.	178.1	142.8	180.1	30
May	243.7	139.5	180.9	27
June	263.2	185.2	198.8	27
July	217.8	124.7	152.9	20
Aug.	221.1*	147.9	165.0*	20
Sept.	....	180.9	....	21
Oct.	....	148.9	....	19
Nov.	....	119.5	....	17
Dec.	....	202.9	....	20

*Preliminary
National Machine Tool Builders' Assn

residential classification failed to show a gain over the corresponding month of the year before."

Indicating that there's still plenty of oomph left in the industry's boom, though, Dodge's tabulation of total September building and engineering contracts in 37 eastern states was $2035 million. That's a 12-per-cent gain over last year and the seventeenth straight month to show a gain over the same period of a year earlier.

Optimism and a Challenge . . .

The U. S. is on the threshold of a $400-billion economy, says Dr. Arthur F. Burns, chairman of the President's Council of Economic Advisors.

The challenge now, he says: "Is to cross this line and go well beyond it." That means developing conditions so lagging industries and areas may join in the advances, extending the good times and improving the quality of living.

But he warned that prosperity often brings on practices that result in its own downfall. He credits government action with holding excesses in check to a considerable degree.

Elements of strength, he says, are: 1. The business expans has been achieved mainly throu the activities of private citize not by stepped-up governm spending. 2. The nation's expa ing income is being shared wid 3. Inventories, except for fa surpluses, are in "favorable re tion to the nation's business." Our own expansion has been par leled in other areas of the f world, Western Europe in part ular.

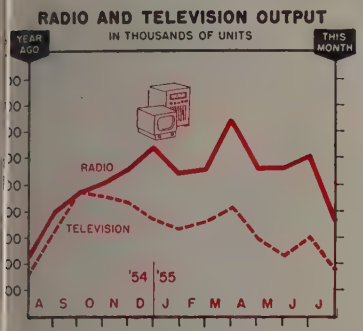
Two-Refrigerator Families . .

Sixty per cent of Americ homes will be air conditioned 1965, and annual sales of refr erators and automatic wash will have increased by 1 milli units, predicts Roger M. Kyes, v president of General Motors.

"Over the next decade or so have the opportunity to make appliance industry as important factor in the economy as the au mobile industry is today," says Kyes who heads up GM's Dayt Household Appliance and G Truck group.

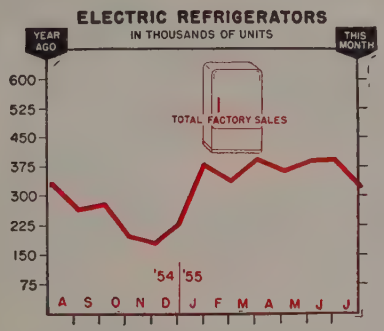
Lesson from Detroit . . .

Judging from his remarks, y can expect auto-selling tactics



	Radio		Television	
	1955	1954	1955	1954
Jan.	1,068	872	655	421
Feb.	1,090	769	703	427
Mar.	1,482	940	831	600
Apr.	1,100	745	583	458
May	1,114	722	467	396
June	1,205	838	590	544
July	718	438	344	307
Aug.	....	785	...	633
Sept.	....	932	...	948
Oct.	....	998	...	921
Nov.	....	1,099	...	859
Dec.	....	1,262	...	833
Total	....	10,400	...	7,347

Radio-Electronics-Television Mfrs. Assn.



	Total Factory Sales—Units		
	1955	1954	1953
Jan.	381,197	344,401	325,186
Feb.	338,575	334,122	377,605
Mar.	392,774	330,641	368,498
Apr.	364,298	280,900	366,951
May	390,385	282,164	317,667
June	395,936	303,127	343,114
July	323,240	325,061	298,838
Aug.	.....	256,665	232,981
Sept.	.....	271,859	231,224
Oct.	.....	190,753	179,749
Nov.	.....	175,557	139,563
Dec.	.....	228,612	197,102
Total	.....	3,323,562	3,378,478

National Electrical Mfrs. Assn.

come into greater prominence in the appliance field: Comments Mr. Kyes: "I see no reason why we should not have two-refrigerator families as well as two-car families." He said about 10 million two-refrigerator families is "not an unrealistic goal."

Also, he bases part of his optimism about the industry's future on: "The vast replacement market that awaits the enterprising merchant in our industry as the manufacturer brings out new and improved products, creating what we call dynamic obsolescence."

Slated for Frigidaire: "A more orderly and satisfactory method for arriving at trade-in values of used products."

Caution on Price Hikes . . .

Business, especially big business, faces an important decision on pricing policy in the months ahead, says Henry H. Heimann, executive vice president, National Association of Credit Men. Unless increases seem in line to the consumer, he warns, a mild buyers' strike can quickly follow.

Also, he states, an attempt to increase profits beyond the added costs and a fair return automatically brings on added wage demands.

Trends Fore and Aft . . .

"The American economy is continuing to enjoy the best of health, and I am confident that the last three months of 1955 will be as prosperous for business generally as the first nine were," states Harlow H. Curtice, president of General Motors . . . Can production is headed for an all-time record in 1955, reports William C. Stolk, president, American Can Co. . . . Metal treating billings in August were one-third greater than a year ago, says the Metal Treating Institute . . . Amana Refrigeration Inc. expects 1955 volume to exceed 1954's by 50 per cent. By broadening product lines and expanding production facilities, it hopes to boost 1956 output another 50 per cent . . . "The third quarter for U. S. Industries Inc. was better than the two preceding ones, and we expect further improvement in the fourth quarter," says John I. Snyder Jr., chairman and president . . . Sales volume at Federal Screw Works, Detroit, is up 50 per cent over the first fiscal quarter of last year, and incoming orders are at a most satisfactory rate, says B. L. Norton, president.

Choose from 11 types of Ohio Iron and Ste

Carbon Steel Rolls
Ohioloy Rolls
Ohioloy "K" Rolls
Holl-O-Cast Rolls
Chilled Iron Rolls
Ohio Double-Pour Rolls

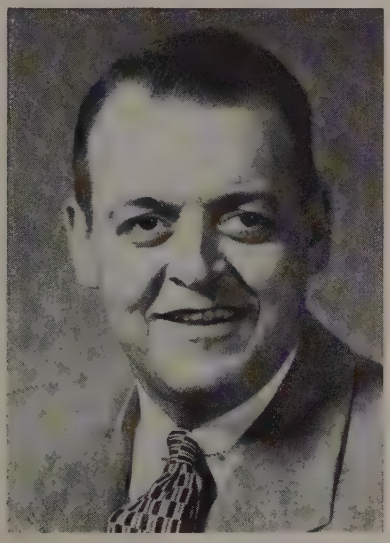
Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

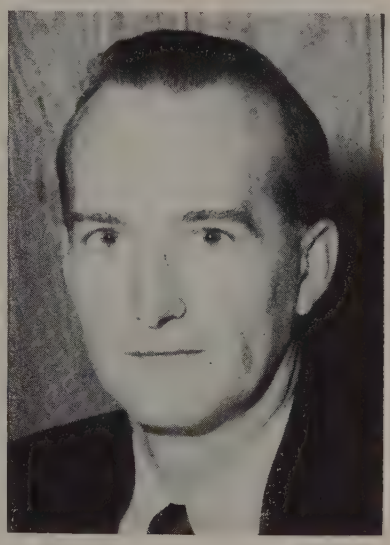
THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • Plants at Lima and Springfield, Ohio

J. J. I. JAMIESON
. Republic steel & tubes asst. sales mgr.



E. W. BAUMGARDNER
. . . Trabon Eng. sales manager



ROBERT B. MEACHAM
. . . Buxton Mfg. v. p. and sales mgr.

J. I. Jamieson was made assist- general manager of sales, steel l tubes division, **Republic Steel rp.**, Cleveland. For the last 11 ars he has been manager of es of the mechanical division, el and tubes.

wis W. King, roll department nager, **Birdsboro Steel Foundry Machine Co.**, Birdsboro, Pa., was ointed assistant to the vice pres- nt-engineering. His duties con- rn the sale of rolling mill ma- nery and designing of rolls. He succeeded by **Ralph H. Scholl,** rmer sales manager of National ll & Foundry Co.

eldon V. Clarke was made man- er of the general purchasing de- rtment of **Union Carbide & Car- n Corp.**, New York. He succeeds **V. Huffard,** retired.

mes H. Bechtold was named nager, metallurgy department, search laboratories, **Westing- use Electric Corp.**, Pittsburgh.

vin A. Klema was made chief tallurgist of **Bristol Brass Corp.**, istol, Conn. He succeeds **Horace Staples,** retired. He was produc- n manager.

nn E. Sandberg was made sales nager, **Shenango Steel Co.**, Far- l, Pa. **William E. Kennedy** be- nes assistant sales manager. He ntinues to handle development d expansion of coated strip steel.

E. W. Baumgardner was appointed sales manager of **Trabon Engineering Corp.**, Cleveland. He has been sales manager for the last three years at Industrial Ovens Inc.

James F. Pease, as sales manager, heads the new industrial sales division of **Dayton Pump & Mfg. Co.**, Dayton, O. He was field sales manager.

At the new **Plymouth Division** of Burroughs Corp. at Plymouth, Mich., **Du Ray Stromback** was made manager of engineering; **Byron A. Runde,** chief product engineer; and **Charles Geisheck,** chief product improvement engineer.

International Business Machines Corp., New York, reorganized its electric typewriter division as a completely autonomous operation separate from other divisions of the company. **H. Wisner Miller Jr.**, sales manager since 1947, will be general manager of the newly constituted division. **Henry W. Reis Jr.** was made sales manager and **R. H. Rettew** controller.

E. F. Giguere was named vice president-sales of **Transistor Products Inc.**, Waltham, Mass., an operating unit of Clevite Corp.

Edward F. Jennings was made New York district sales manager for **Laclede-Christy Co.**, division of H. K. Porter Company Inc.

Robert B. Meacham was elected vice president and sales manager, **Buxton Mfg. Co.**, Dover, N. J. He was sales manager of Novelty Steam Boiler Works Inc.

Michiana Products Corp., Michigan City, Ind., named **Norman E. Seymour** works manager of its steel fabricating and oil filter divisions. For the last seven years Mr. Seymour has been with Borg-Warner Corp., recently serving as works manager for its Wooster, O., division.

Harold W. Beder was named general sales manager for **Harris-Seybold Co.**, Cleveland. He was general sales manager for Whitney Chain Co.

Ernest J. Eddy was named purchasing agent for **Gaines-Collins,** Los Angeles.

James L. Toohey Jr. was made a purchasing agent of the new special products division of **Ford Motor Co.**, Dearborn, Mich.

Anthony J. Derrick was made manager of the foundry department of **Kennedy-Van Saun Mfg. & Eng. Corp.**, Danville, Pa. He is in charge of production and sales. Mr. Derrick was with American Brake Shoe Co.

A. P. Controls Corp., Milwaukee, appointed **Arthur W. Krause** chief

methods engineer to succeed **Ed Solski**, now chief industrial engineer.

Lukens Steel Co. merged its Philadelphia and Coatesville, Pa., district sales office. In the new setup, **Edmund Pfeifer** is manager of the Coatesville district sales office and is replaced by **William C. Simpson** as manager, New York sales office.

Truman Jones was named vice president-sales and **Edward W. Forth** vice president-manufacturing at **De Walt Inc.**, Lancaster, Pa., subsidiary of American Machine & Foundry Co. Mr. Jones was general sales manager, Mr. Forth general superintendent.

William M. Goss was elected president, **Scovill Mfg. Co.**, Waterbury, Conn., to succeed **L. P. Sperry** who is now chairman of the board. Mr. Goss was executive vice president. He is succeeded by **Mark L. Sperry II** who also will be general manager.

I. F. Fausek was elected president, **Modern Engineering Co.**, St. Louis. He succeeds **A. J. Fausek**, now chairman of the board. **A. V. Fausek** was made vice president-sales; **Willis L. Reedy**, vice president-production; and **I. F. Fausek Jr.**, secretary.

William Tucker was elected executive vice president and a director of **F. C. Russell Co.**, Cleveland. He is responsible for the general management of the company.

GORDON B. ANDERSON

GEORGE T. DEXTER

. . . Puget Sound Sheet Metal Works executives

Gordon B. Anderson, vice president, was elected president of **Puget Sound Sheet Metal Works**, Seattle. He succeeds **Harry S. Bowen**, now chairman of the board. **George T. Dexter** was made executive vice president and **George K. Taylor** vice president-production.

Wesley D. Hamilton was elected executive vice president in charge of operations at **International Steel Co.**, Evansville, Ind. He was vice president-sales and assistant general manager. **Frank W. Schroeder** advanced from eastern sales manager to vice president, steel division. **Arthur M. Simpson** was promoted from general manager, revolving door division, to vice p ident and general manager of division.

V. J. Heinis was named gen manager of **Rheem Products D sion** (Houston) of Rheem Co. He joined Rheem in 1946 has been general sales mana products division.

D. I. Brown joined **Washing Steel Corp.**, Washington, Pa., assistant to the president.

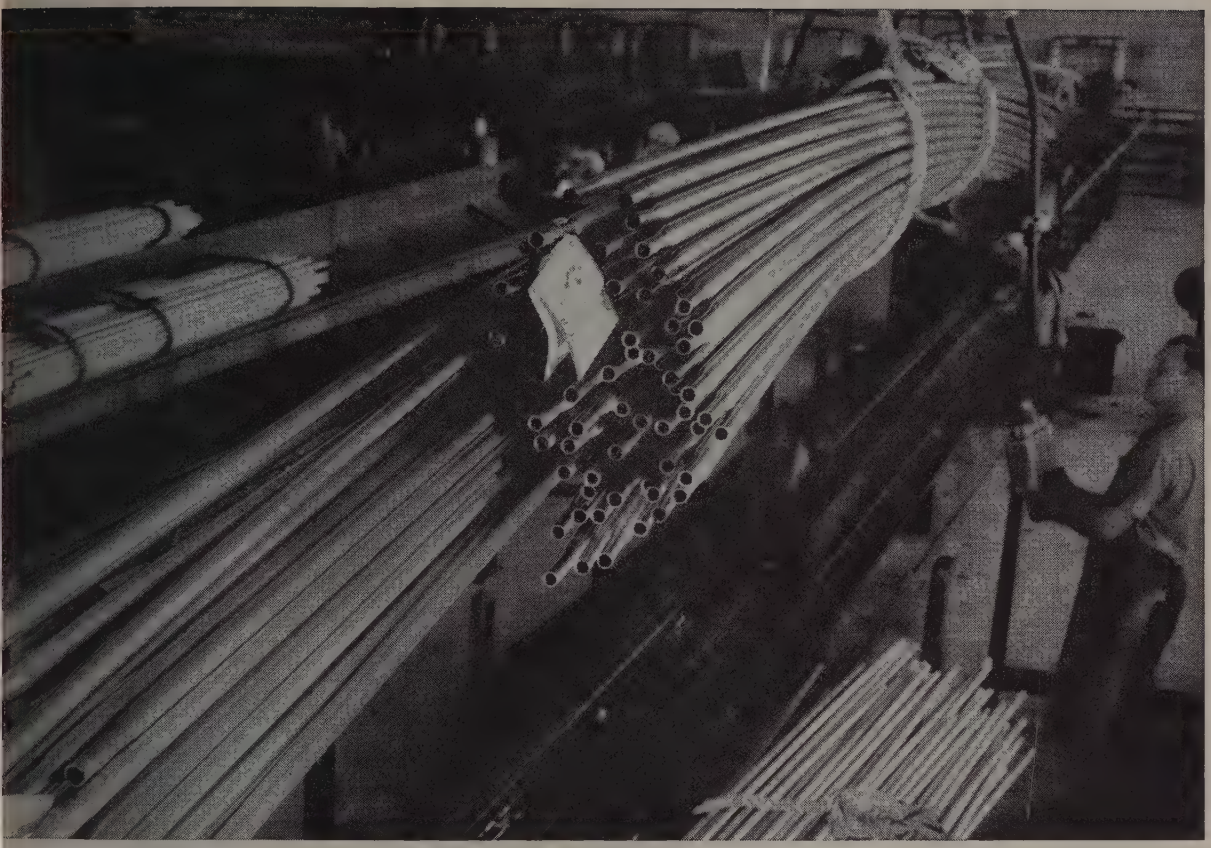
George J. Heideman was ele treasurer and **Charles R. Norden** secretary of **Kennam Inc.**, Latrobe, Pa. They succeed

WESLEY D. HAMILTON

FRANK W. SCHROEDER

ARTHUR M. SIMPSON

. . . executive positions at International Steel Co.



Good News about Titanium!

SUPERIOR TITANIUM TUBING NOW AVAILABLE IN A WIDE RANGE OF SIZES, FORMS, TEMPERS

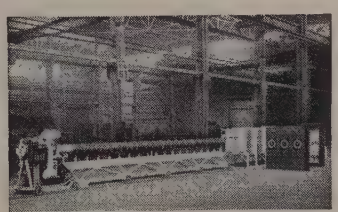
The big news about titanium these days is not its high strength to weight ratio; its formability; its corrosion, heat and electrical resistance. Engineers know all this. What they want to know is *when*. The answer is *right now*, as far as tubing is concerned.

Although everything is special as far as the production of titanium tubing is concerned—more grinding operations are required, special lubricants have to be employed, drawing schedules have to be much lighter, annealing must be done in special furnaces, special pickling solutions are demanded—the end result is always a standard tubing obtainable from Superior distributors coast to coast. Sizes range in O.D. from .012″ up to .50″, in wall thickness from .002″ to .187″, and in lengths up to 24 feet. Tempers—fully annealed, half hard and full hard. Forms—Seamless and Weldrawn®.

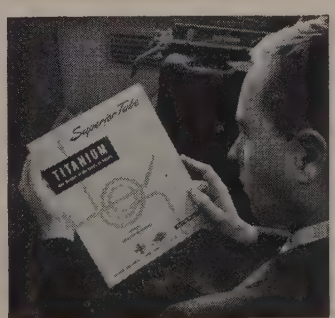
Applications are increasing rapidly. They now range from use in the atomic energy programs—to low stress aircraft structural parts—to pneumatic, hydraulic, refrigeration lines—to processing lines in the chemical industry.

Write now for your free copy of Bulletin 43—it contains complete technical and ordering information—and for the name of the Superior distributor nearest you. SUPERIOR TUBE COMPANY, 2005 Germantown Ave., Norristown, Pa. *On the West Coast:* Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif.

Round and shaped tubing available in Carbon, Alloy and Stainless Steels; Nickel and Nickel Alloys; Beryllium Copper; Titanium; Zirconium



Titanium is reactive, must be heat treated without atmospheric contamination. This vacuum annealing furnace handles material 24 feet in length, operates at temperatures up to 1850°F, is automatically controlled.



All you need to know about titanium tubing is contained in this newly revised 8-page booklet—Bulletin 43. Contains processing information, properties, advantages and end uses, describes sizes, forms and tempers available.

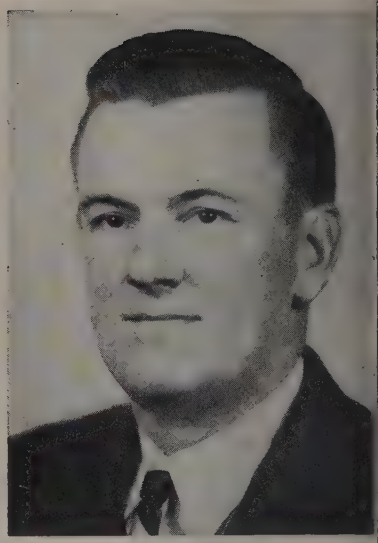
Superior Tube

The big name in small tubing

All analyses .010″ to ⅝″ O.D. Certain analyses in light walls up to 2½″ O.D.

ALLEN W. SALZMAN
. . . chief engineer at Waukesha Tool

GEORGE BENNETT
. . . president of Borroughs Mfg.



JOHN W. BUSKIE
. . . Tenn-Tex Alloy & Chemical v. p.

late **George T. Kearns** who served in both capacities.

Allen W. Salzman joined **Waukesha Tool Co.**, Waukesha, Wis., as chief engineer. He also will head up the firm's new thrust bearing division. He has been process and development engineer with Racine Hydraulics & Machinery Inc.

At the Cleveland steel service plant of **Joseph T. Ryerson & Son Inc.**, **Homer E. Rieker** was made manager of sales, a new post. He is succeeded as manager of sales-tubular products and cold finished steel bars by **William B. Hawk.**

Francis T. Thorley was made assistant sales manager of **Hy-Pro Tool Co.**, New Bedford, Mass.

Fred C. Lange succeeds **J. A. Teach**, retired, as manager of Chicago Works, fabricated steel construction, **Bethlehem Steel Co.**

Borroughs Mfg. Co., Kalamazoo, Mich., subsidiary of American Metal Products Co., elected **George Bennett** president and **Tracy Call** treasurer-secretary. Mr. Bennett was general manager. Mr. Call was controller.

Richard N. Golbach, director of sales for **Central Scientific Co.**, Chicago, was elected a vice president.

LeRoy Staunton was made sales manager for Uskon radiant heating panels of **United States Rubber Co.**, New York.

L. J. Cross was made a purchasing agent of **Wheeling Steel Corp.**, Wheeling, W. Va.

Dr. Alvin M. Weinberg was made director of **Oak Ridge National Laboratory**, Union Carbide Nuclear Co., a division of Union Carbide & Carbon Corp., New York.

John W. Buskie was elected vic president of **Tenn-Tex Alloy Chemical Corp.**, Chattanooga, Tenn He has been a consultant wit Tennessee Products & Chemica Corp. and with Tenn-Tex Alloy both divisions of Merritt-Chapma & Scott Corp., and continues i that position with the former firm From 1949 to 1954 Mr. Buskie wa general manager of metallurgy an development for Ohio Ferro Alloy Corp.

Ivan E. Howard was made Cleve land district sales manager fo **Lamson Mobilift Corp.**

Bertrand Y. Auger was made tech nical director, reinforced plastic division, **Minnesota Mining & Mf Co.**, St. Paul.

Dr. Albin N. Benson was mad technical director of **Bridge To & Die Works Inc.**, Philadelphia.

OBITUARIES . . .

Irving T. Bennett, 55, chairman and chief executive officer of **General Cable Corp.**, New York, died Oct. 3.

Lincoln Kilbourne, 44, general manager of sales, industrial division, **Jeffrey Mfg. Co.**, Columbus, O., died Oct. 5.

Robert P. Tyler, vice president-sales, **Macwhyte Co.**, Kenosha, Wis. died Oct. 2.

Paul R. Schieve Jr., 49, president, **Buffalo Structural Steel Corp.**, Buffalo, died Sept. 29.

Julius Karch, 74, owner, **Karch Pipe Co.**, Rochester, N. Y., died Oct. 2.

George Skakel Sr., chairman of the board of **Great Lakes Carbon Corp.**, New York, died Oct. 3.

William V. Knoll, 66, a vice president of **Ross Midwest Fulton Corp.**, at Dayton, O., died on Sept. 2

W. Grant King, founder of **Kin Sewing Machine Co.**, Buffalo, die Sept. 16.

Ernest E. Gore, plant manage **Lincoln Bearing Co.**, Clevelan died Oct. 3.

Thomas S. Smith, 45, a vice pres dent, **Smith Engineering Work** Milwaukee, died Sept. 22 of a hea attack.

mken To Expand

ll spend $7 million to up capa- es of its Steel & Tube, Rock and Bearing divisions

IKEN ROLLER BEARING Co., nton, O., has launched a multi- lion-dollar expansion and mod- ization program. A $7-million iget for 1956 has been estab- ned for the purchase of equip- nt and for increasing the ca- ities of its Steel & Tube, Rock and Bearing divisions.

mprovements will include: En- gement and modernization of Gambrinus, O., tube mill; in- llation of two annealing fur- ces; construction of an oxygen nt; construction of a central rehouse at the Bucyrus, O., nt; and purchase of automatic ew machines and grinding uipment for all plants.

More Bearings — An additional -million budget has been estab- hed for the purchase of facili- s to produce railroad bearings. is unlikely that the entire sum ll be spent in 1956. Engineering ns call for facilities to produce ,000 additional car sets of rail- ad bearings per year. As orders om the railway industry in- ease, funds will be appropriated om the $5-million budget to pur- ase additional equipment.

Equipment will be geared to rn out the newly designed jour- l bearings that railroads are ying in unprecedented volume, mpany officials say.

rysler To Build Press Plant

Chrysler Corp. will build a mul- nillion-dollar metal stamping d fabricating plant at Mace- nia, O. Covering 1.5 million sq it will be operated by the Auto- otive Body Division. The plant ll house 28 lines of huge stamp- g presses—about 260 machines, e largest being 1800-ton presses. me 45,000 tons of steel will be nsumed each month.

aw-Knox To Buy Continental

Blaw-Knox Co., Pittsburgh, will rchase Continental Foundry & achine Co., subject to stockhold- ' approval. Continental oper-

Uranium Output Rising Steadily on Colorado Plateau

This uranium processing mill at Uravan, Colo., is undergoing another large expansion in capacity. The project is expected to be completed early in the fall of 1956, says Kenneth Rush, president of Union Carbide & Carbon Corp.'s newly formed atomic energy division, Union Carbide Nuclear Co. Engineering work is well under way and construction contracts are being placed currently

ates plants at Wheeling, W. Va.; East Chicago, Ind.; Coraopolis and Erie, Pa. The company's principal business is rolling mill machinery. The Copes-Vulcan Division at Erie produces regulators, soot cleaners and special power plant equipment.

Offers Small Alloy Castings

Contract production of small shell-molded castings of cobalt-base alloys and other nonferrous and ferrous alloys is now offered by Crobalt Inc., Ann Arbor, Mich. The firm is equipped to make shell molds up to 14 x 18 in. pattern size. It has pattern-making facilities, electric arc furnaces and cleaning equipment. Present capacity is 1500 lb per shift.

Fabricator Moves to Baltimore

National Wire Products Corp., formerly U. S. Metals Corp. of San Juan, Puerto Rico, moved its plant facilities to Fischers road and Pennsylvania Railroad, Baltimore 22, Md. The firm makes welded wire concrete reinforcement mesh and other wire products. Officers of the firm are: H. C. Youngen, president; Ray C. Faust, secretary and treasurer.

Cruse-Kemper, Wheeler Merge

Cruse-Kemper Co., Ambler, Pa., steel plate fabricator, has been consolidated with C. H. Wheeler Mfg. Co., Philadelphia. Cruse-Kemper, operating as a division of Wheeler, will continue to furnish welded steel parts for condensers, pumps, deck machinery and auxiliary equipment to its parent firm. The division also will continue its field erection, gas holder inspection and repair business. F. G. Deker is in charge of the Cruse-Kemper Division.

Enameling Firm Changes Hands

Robert H. Stegeman of Cincinnati purchased Barrows Porcelain Enamel Co., that city, producer of porcelain enamel sign faces and letters, architectural components and industrial products. Mr. Stegeman formerly was associated with the Dayton, Ky., firm of Wadsworth Watch Case Co.

Business Machine Firm Expands

Addressograph - Multigraph Corp., maker of business machines, is adding 44 per cent to existing office and plant facilities at 1200

(*Please turn to page* 104)

AUSTIN-WESTERN HYDRAULIC CRANE

Most Versatile Too

ıt Columbia Steel

Useful Inside and Outside...Lifts, Carries, and Spots Any Material Anywhere

Says Robert W. Williamson, Plant Engineer

Columbia Steel & Shafting Co., Carnegie, Pa.

"This hydraulic unit—has met every requirement we have made of it."

"Besides that, the over-all savings is impressive."

"Our Hydraulic Crane has proved to be so powerful, speedy and maneuverable that it has replaced a smaller mobile crane and its operator, as well as a crawler tractor requiring another operator."

"We save the difference in the cost between owning and operating one versatile tool in place of two less useful ones."

RETURNS 100% A YEAR ON INVESTMENT

"... We figure our A-W unit directly saves us 100% a year on our investment—plus helping to reduce maintenance cost and downtime."

HANDLES NUMEROUS JOBS

"This hydraulic unit frequently supplements the Shipping Department's facilities and loads box cars and trucks with finished steel."

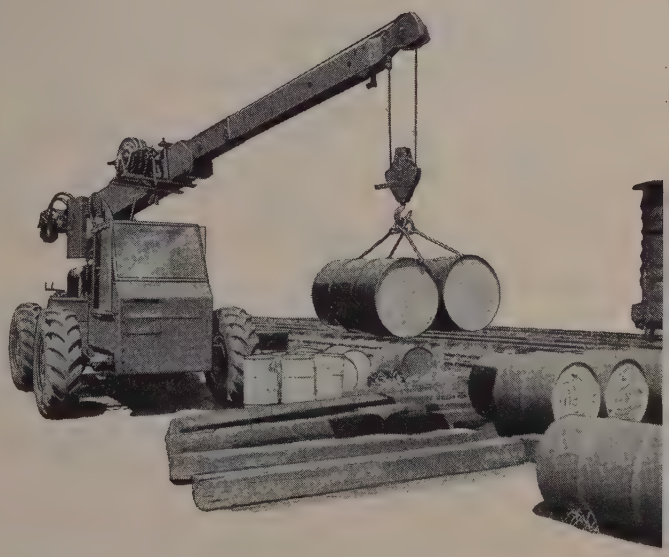
"When an overhead crane is down for repairs, our Austin-Western unit unloads four-foot diameter coils of wire and arranges them in racks in the warehouse."

"When trucks happen to be immobile with tire and battery trouble, we pull them in or assist in quick tire change."

"When our 45-ton diesel is tied up elsewhere, we even pull loaded gondola and box cars on our switch tracks."

"The crane takes all kinds of conditions in stride."

"... have really required no repairs in 10 months of pretty grueling service."



USTIN-WESTERN COMPANY

Construction Equipment Division · Baldwin-Lima-Hamilton Corporation

AURORA, ILLINOIS, U.S.A.

Power Graders • Motor Sweepers

Road Rollers • Hydraulic Cranes

AUSTIN-WESTERN COMPANY
623 Farnsworth Avenue, Aurora, Illinois
Please send complete Gould Certified Report N. 5507.

Name .....

Title .....

Company .....

Street .....

City ..... Zone ..... State .....

(*Concluded from page* 101)

Babbitt Road, Euclid, O. (Cleveland). The program provides for expanded manufacturing facilities and greatly enlarged research and engineering operations.

Buys Antichecking Iron Line

As an adjunct to its wood preserving business, Koppers Co. Inc Pittsburgh, purchased production facilities for manufacturing anti checking irons from Brainard Steel Division, Sharon Steel Corp Sharon, Pa. Machinery for making the "C" or "S"-shaped pieces of steel which are driven into the ends of railroad ties and other large timbers to retard splitting has been moved from the Brainard plant at Warren, O., to the Koppers plant at Orrville, O.

Rheem Builds Plant Addition

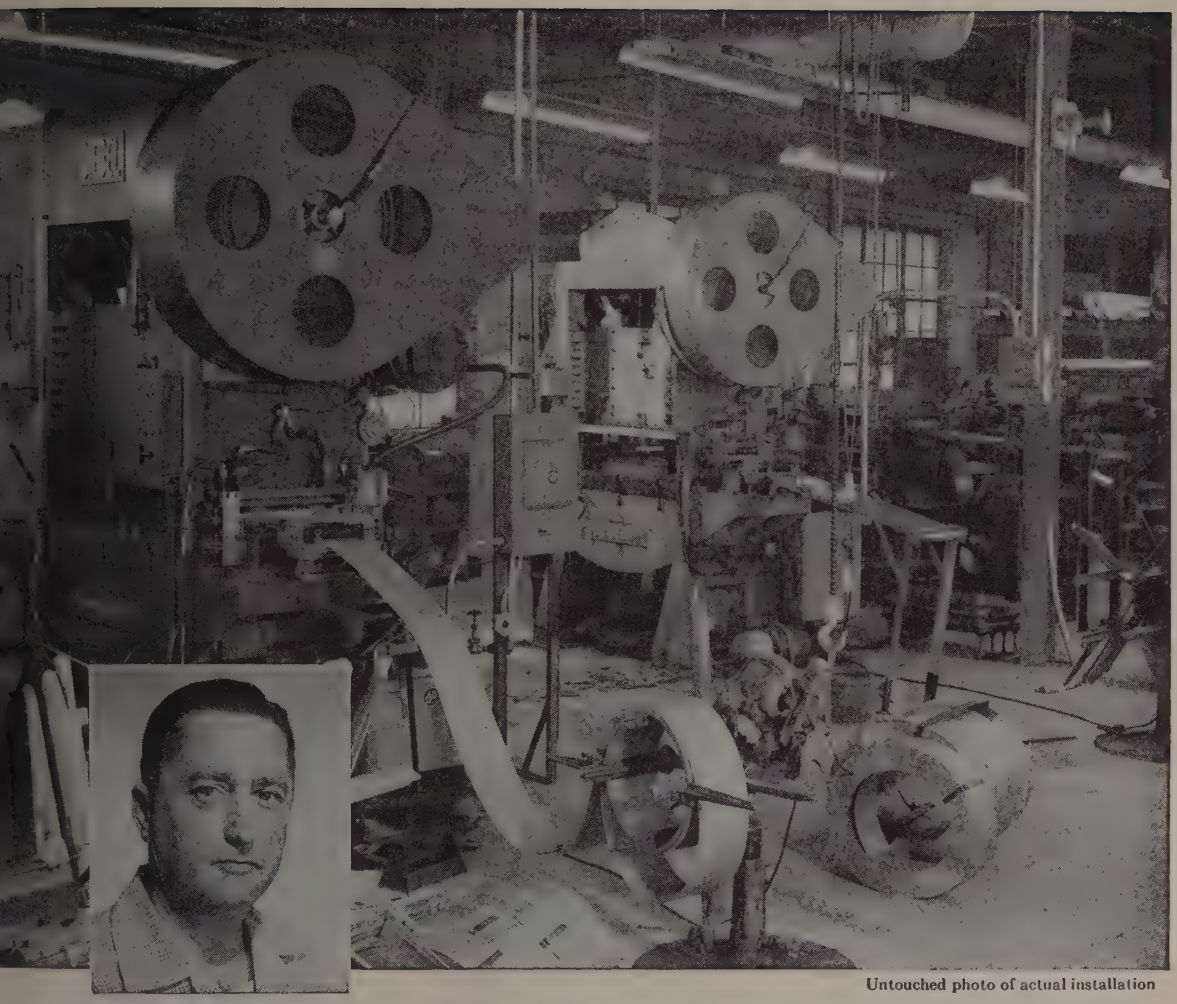
Rheem Mfg. Co., Chicago, is adding 64,000 sq ft of floor space to its Chicago plant. The expansion was made necessary by growth in the firm's business (manufacturing steel drums, warm air furnaces and central air conditioning units for homes) and the transfer of Rheem's clothes dryer activities to Chicago from the West Coast. Cost of the new structure will be about $500,000.

New Jersey Wire Mill Enlarged

Triangle Conduit & Cable Co. Inc. is adding 60,000 sq ft of warehouse and manufacturing space to its wire mill at New Brunswick N. J.

Ferro Subsidiaries Merge

Louthan Mfg. Co., East Liverpool, O., merged with Ferro Powdered Metals Inc., Salem, Ind. Ferro Corp., Cleveland, is the parent company of both wholly owned subsidiaries. Louthan produces porcelain refractory and electrical insulations and various products for the ceramic industry. Ferro Powdered Metals supplies parts to the appliance, automotive and hardware industries. The merged company will carry on both operations under the name of Louthan Mfg. Co., with the Salem operation to be known as



Untouched photo of actual installation

ola Electric Gets Extra Day's Work Every Week with DIEBEL AUTOMATIC PRESS!

You need simply observe Sola Electric Company's progressive press room re-equipment program to see why they are a leading manufacturer of constant voltage transformers and fluorescent ballasts! Doing it faster, better, more economically . . . doing it automatically is the by-word at Sola!

As Max Haussler, in charge of tool making and metal working operations, explains it, "Our first installation of the program was a Diebel 60 Ton Automatic Press for stamping laminations. We soon discovered that the Diebel Press was giving us a 30% reduction in labor costs of producing laminations."

"In addition, we increased production between grinds by 30% and *die chipping was virtually eliminated!* Then too, down time and set-up time has been cut in half and maintenance costs are next to nothing! As our records show, we are getting an extra day's production every week over the former operation . . . thanks to the Diebel Press!"

In these times, can *YOU* afford anything short of a fully automatic press room? Diebel Presses are compact, self-contained, fully automatic *factories* in themselves, delivered completely equipped and ready to work for you . . . even the die if you choose!

Remember, the men at Diebel are automatic press specialists, ready and willing to help you with your stamping problems. A Press Plans Board and Engineering Staff are at your disposal. Next time, consult with Diebel first . . . and get *automatic* profits!

DIEBEL HI-PRODUCTION AUTOMATIC PRESSES

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Ferro Powdered Metals Divi
The merger will bring togethe
search and development tale
both operations for explora
work in the cermet field. H
Marks, executive vice preside
Ferro Corp., is president of
than Mfg Co.; C. W. Gerster,
utive vice president; G. E. W
secretary-treasurer; J. F. H
vice president in charge of
Powdered Metals Division.

REPRESENTATIV

Schroeder Bros., Pittsburgh
been appointed representative
Rivett Lathe & Grinder Inc.,
ton, maker of valves, cylinders
hydraulic power units, and
Gerotor May Corp., Baltir
manufacturer of hydraulic pu
motors and transmissions.

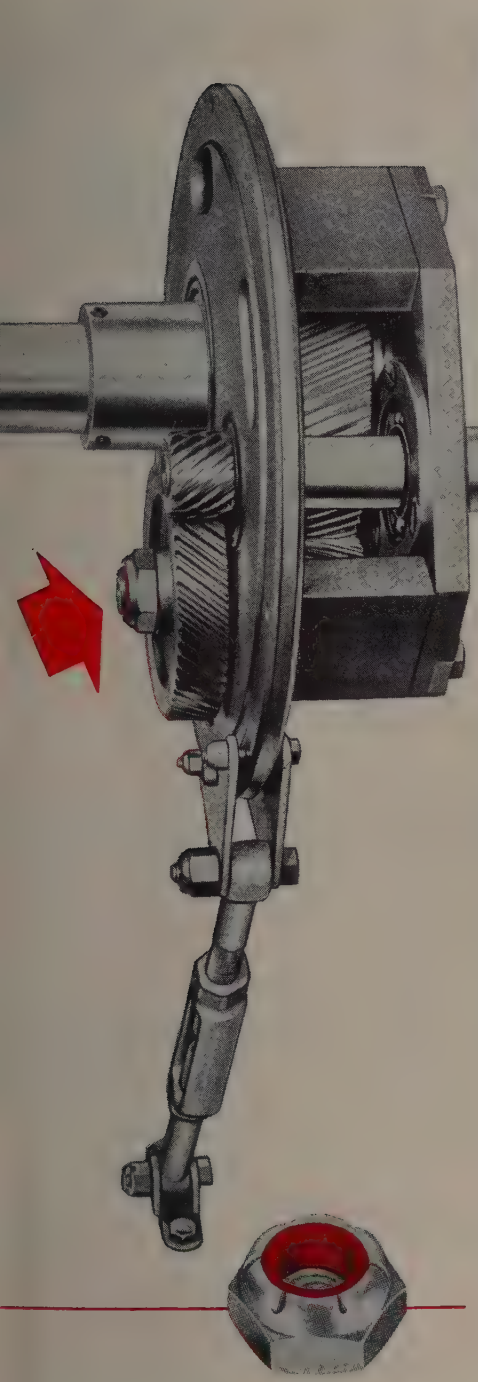
ASSOCIATION

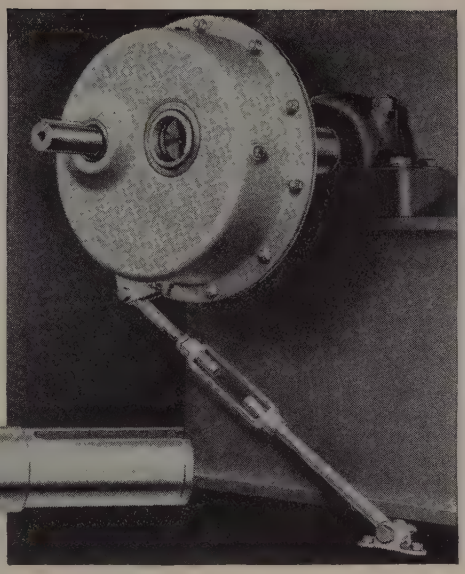
Association of Iron & Steel
gineers, Pittsburgh, elected
following officers for 1956: P
dent, W. H. Collison, Great L
Steel Corp., Ecorse, Mich.;
vice president, J. D. O'R
Weirton Steel Co., Weirton,
Va.; secretary, S. C. Read, J
& Laughlin Steel Corp., P
burgh; treasurer, Emil Kern,
legheny Ludlum Steel C
Brackenridge, Pa.

Drop Forging Association, C
land, appointed Waldemar
joks to its staff to head the
ciation's statistical program.
Naujoks was vice president
general manager of Globe F
Inc., Syracuse, N. Y.

Robert T. Scott has been na
public relations director for
terial Handling Institute
Pittsburgh. L. W. Shea is s
tary.

Dr. David W. Levinson, a
cialist in physical metallurgy,
been appointed supervisor of
ferrous metallurgy research in
metals research department
Armour Research Foundation,
nois Institute of Technology,
cago. A major share of his gr





The Falk Corp., of Milwaukee, also uses Elastic Stop nuts in the tie rod assembly . . . and on the gear housing to maintain tight cover fit.

Elastic Stop® nuts solve critical gear adjustment problem in new speed-reducing unit!

In its rugged new Shaft-Mounted Drive, The Falk Corporation uses a self-locking Elastic Stop nut to secure the high-speed gear to the intermediate shaft, as shown in the illustration on the left.

The precision-made Elastic Stop nut stays firmly in place and the close seat-squareness tolerances maintain the exact original gear adjustment withstanding severe vibration caused by shock loads transmitted through the gears. Costs are cut because drilled bolt holes and cotter pins are eliminated.

Here's how this Elastic Stop nut works: The familiar red collar of the Elastic Stop nut is deliberately undersized in relation to the shaft (or bolt) diameter. It grips the shaft with a perfect fit, enforces a continuing self-locking pressure against the metal threads, and holds the nut securely in place at the desired point on the shaft. This same tight-fitting locking collar also provides a seal that prevents oil from seeping along the bolt threads, wherever oil seepage is a problem. And because the bolt threads are protected against moisture from without, the nuts cannot become "frozen" to the bolt by corrosion. The elastic recovery of the red collar permits extended re-use of Elastic Stop nuts.

Mail the coupon for information on how Elastic Stop nuts can solve your specific fastening problem.

ELASTIC STOP NUT CORPORATION OF AMERICA

ROLLPIN TRADEMARK

Elastic Stop Nut Corporation of America
Dept. N67-1060, 2330 Vauxhall Road, Union, N. J.
Please send the following free fastening information:

☐ ELASTIC STOP nut bulletin

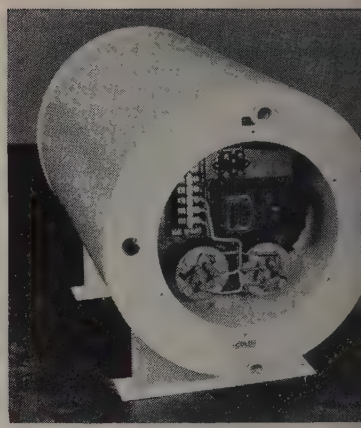
☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name_____ Title_____

Firm_____

Street_____

City_____ Zone_____ State_____



ABOVE: A completed Hubbell booster heater.

LEFT: Welding the head on a 10- Everdur booster heater tank using Ana 1/8" Everdur-1010 Rod. All spuds, flang fittings are Everdur.

Everdur tanks...welded with Everdur-1010 rod make long-life booster water heaters

Water at 180F may be highly corrosive. Yet 180-degree rinse water is required by many sanitary codes for sterilization in commercial dishwashing machines.

The Electric Water Heater Co. of Stratford, Conn., makers of Hubbell water heaters, and one of the pioneers in the electric water heater business, builds 10-gallon and 20-gallon models for just this service. Experts in the design and fabrication of water heating equipment, Electric Water Heater Company is also a pioneer in the use of Everdur* for its tanks.

The tinned Everdur tanks for booster heaters are welded by the carbon-arc method, using Everdur-1010 Welding Rod. In this tough service in restaurants, hotels, schools and institutions, the tanks have performed dependably and are considered to have a long life expectancy.

AnacondA Welding Rods for many types of welding are available from distributors throughout the United States and Canada. See your distributor for help in selecting the exac to help you speed assembly an production costs. Or write for Pu tion B-13. Address The American Company, Waterbury 20, Con Canada: Anaconda American Ltd., New Toronto, Ont.

*Reg. U. S. Pat. Off.

braze or weld with confide

ANACONDA
welding rods

You can select from 9 ANACONDA welding rods

NAME OF WELDING ROD	APPROX. MELTING POINT. DEGREES Cent.	Fahr.	USUAL APPLICATIONS
*ANACONDA COPPER-372 (Patent No. 2,220,464)	1075	1967	Inert-gas arc and oxyacetylene welding of coppe
TOBIN BRONZE-481	885	1625	Oxyacetylene braze welding of steel, cast iron, copper alloys.
ANACONDA-997 (Low-Fuming) BRONZE	870	1598	A low-fuming manganese bronze for use where highest weld metal properties are required. Oxya lene braze welding of steel, cast iron, and co alloys, and for bearing surfaces.
NICKEL SILVER-828	930	1706	Oxyacetylene braze welding of cast iron and stee strong, color-matching welds and bearing surfac
CUPRO NICKEL-826 (Patent No. 2,012,450)	1225	2237	Oxyacetylene welding of Cupro Nickel and surf of steel.
*EVERDUR-1010	1019	1866	Inert-gas arc, carbon-arc and oxyacetylene weldi Everdur, copper and copper alloys. Also for weldi and for surfacing steel.
*PHOSPHOR BRONZE-351	1050	1922	Inert-gas and carbon-arc welding of phosphor br and copper, and for surfacing steel.
*PHOSPHOR BRONZE-354	1000	1832	Inert-gas and carbon-arc surfacing of steel, and welding phosphor bronze.
**AMBRALOY-928	1040	1904	Inert-gas consumable-electrode welding of alum bronze and for surfacing steel.

*These alloys are also used in the inert-gas consumable-electrode process. Spooled rods are marketed by the manufacturers of the welding equipment.

**Supplied only on spools by the manufacturers of the welding equipment.

involves the newer metals, as titanium, zirconium, ura- and vanadium.

ciety of Industrial Designers, York, changed its name to rican Society of Industrial De- rs. Peter Muller-Munk is pres-

ANNIVERSARIES

nerican Cast Iron Pipe Co., ingham, Ala., is observing its anniversary. The firm has n to become one of the major iron pipe producers in the d. It also has facilities for the uction of centrifugally spun tubes, as well as industrial iron castings.

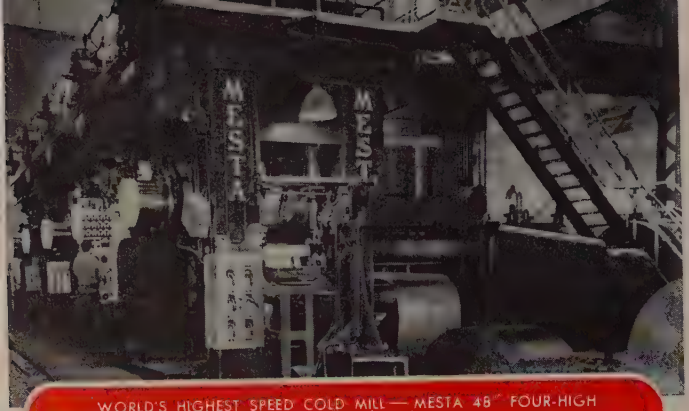
exico Refractories Co., Mexico, is celebrating the 25th an- rsary of its founding.

NEW ADDRESSES

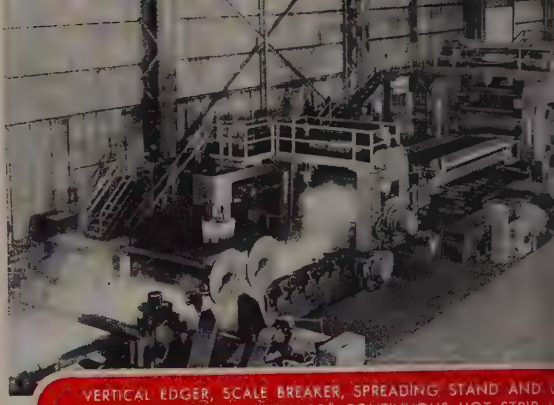
irchild Engine & Airplane .'s American Helicopter Divi- consolidated its operations at E. 16th St., Costa Mesa, Calif. division makes resistance- ed, temperature - resistant, ctural sandwich components; umentation and automatic rol equipment and systems; glass-reinforced plastics; mi- ave components; resistance- ed, stainless steel heat ex- gers.

scoloy-Ramet Corp., Wauke- Ill., moved its branch office 346 Germantown Ave., Phila- hia 40, Pa. E. J. Wunderlich charge of the office. Vasco- Ramet products, including ce- ed-carbide cutting tools, tool- ers and carbide inserts, are ibuted in the greater Phila- hia area by Industrial Supplies nd Precision Tool & Engineer- Corp.

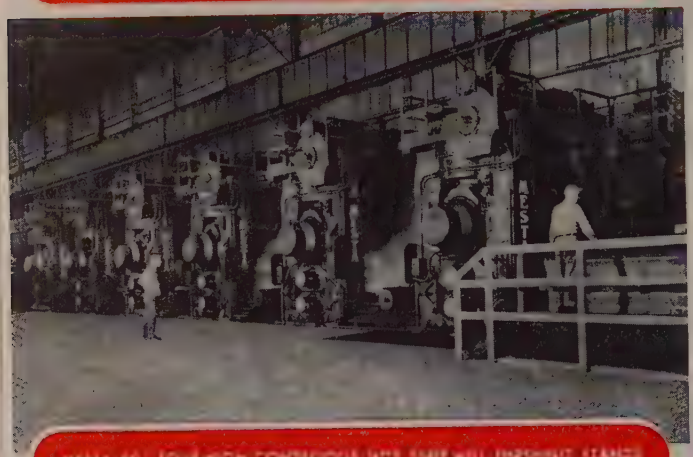
rrington Co., Torrington, ., moved its New York offices 1 Eighth avenue at 15th street. '. Dietrich Jr. is district engi- in charge of bearing sales; C. palding, office manager.



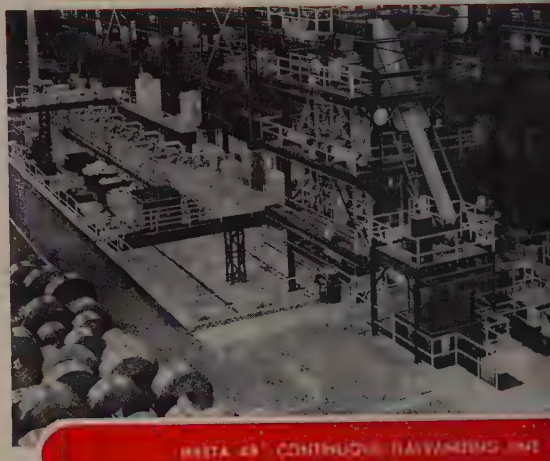
WORLD'S HIGHEST SPEED COLD MILL — MESTA 48" FOUR-HIGH FIVE-STAND HIGH-SPEED TANDEM COLD MILL



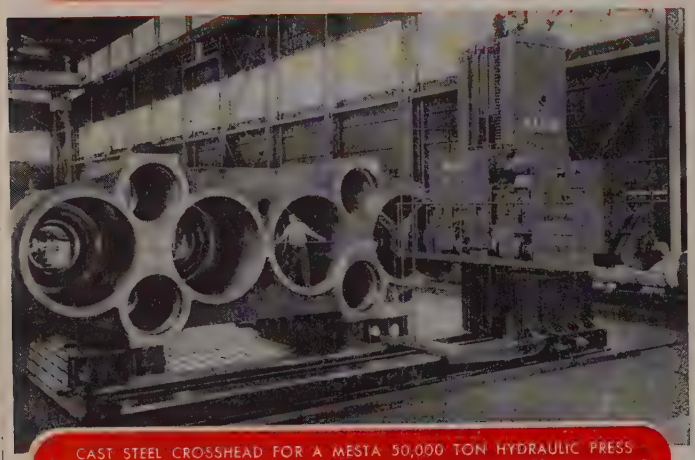
VERTICAL EDGER, SCALE BREAKER, SPREADING STAND AND
STAND ON A MESTA 80" CONTINUOUS HOT STRIP



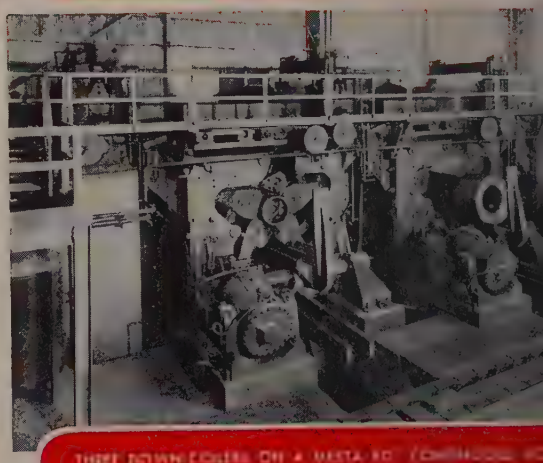
MESTA 60" FOUR-HIGH CONTINUOUS HOT STRIP MILL ROUGHING STANDS



MESTA 48" CONTINUOUS [illegible]

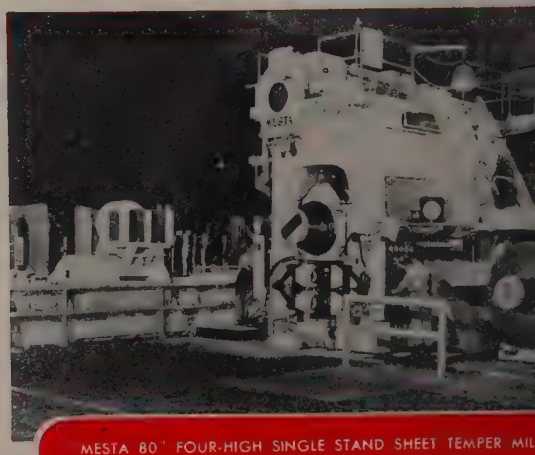


CAST STEEL CROSSHEAD FOR A MESTA 50,000 TON HYDRAULIC PRESS MACHINED ON A MESTA 18" HORIZONTAL BORING AND MILLING MACHINE



THREE DOWN-COILERS ON A MESTA 80" [illegible]

MESTA 45" x 90" UNIVERSAL REVERSING SLABBING MILL

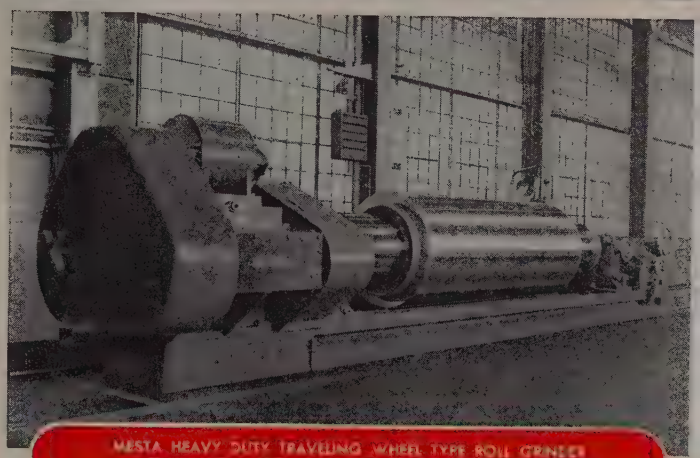


MESTA 80" FOUR-HIGH SINGLE STAND SHEET TEMPER MIL

gners and builders
of complete
steel plants

Designed and Built by MESTA

STA MACHINE COMPANY, PITTSBURGH, PENNSYLVANIA



MESTA HEAVY DUTY TRAVELING WHEEL TYPE ROLL GRINDER
FINISHING A 39" x 154" MESTA BACKING-UP ROLL

MESTA 42" TIN SHEARING LINE WITH TRIMMER
AND COMBINATION FLYING SHEAR AND LEVELLER

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★ ★ ★ ★ ★

Technical Outlook

ORED FORGINGS—Big attention getter at e Air Materiel Command's Conservation Semi- r in St. Louis was an exhibit of cored alumi- m forgings made by Weatherhead Co.'s Avia- n Division, Antwerp, O. Intricate aluminum rts and hollow forgings show fine grain struc- re and high density. Results of vibration and pulse tests exceeded expectations. R. D. Hilton, rector of tooling and estimating, says: "We ve a development program going on titanium red forgings, and Weatherhead is also cast- its eye in the direction of carbon steels." e company says it's ready to supply specifi- ion cored forgings to industry. It's also ng them in its line of fittings.

DAPTABLE—Carboloy Department, General ectric Co., reports its vacuum melted super- oy 1570 holds promise as a sheet material. strength is greater than sheet now used for erburners, tail cones and similar hot spots. e vacuum melted alloy can be inert-arc welded easily as 321 stainless.

LS NEED—In many plants inundated by the w England flood, stores of finished and part- finished parts were left covered with rust and d. Generally, salvage was possible, but it es weeks to hand clean small parts. An swer was found in barrel tumbling. An hour so in the tumbling abrasive, with water and aner, restored parts to their original condi- n.

ELL COVERED—General Electric is using ssure-vacuum impregnation to force varnish ough transformer coils and laminations to tect every area. Blaw-Knox Co. built the tallation, key to which is a driverless car, notely controlled for six-direction motion. e car takes pallets of transformers into and out of a preheat oven, then transfers them into the pressure-vacuum impregnator. After transformers have been treated, the car is automatically retracted, then unloaded.

EXTRUDED COLD—Metallurgists at Battelle are making cold extrusions of titanium, with reductions up to 70 per cent at pressures similar to those used for steel. Smooth, ungalled surfaces are due to a special fluoride surface coating that acts as a gliding agent and lubricant retainer.

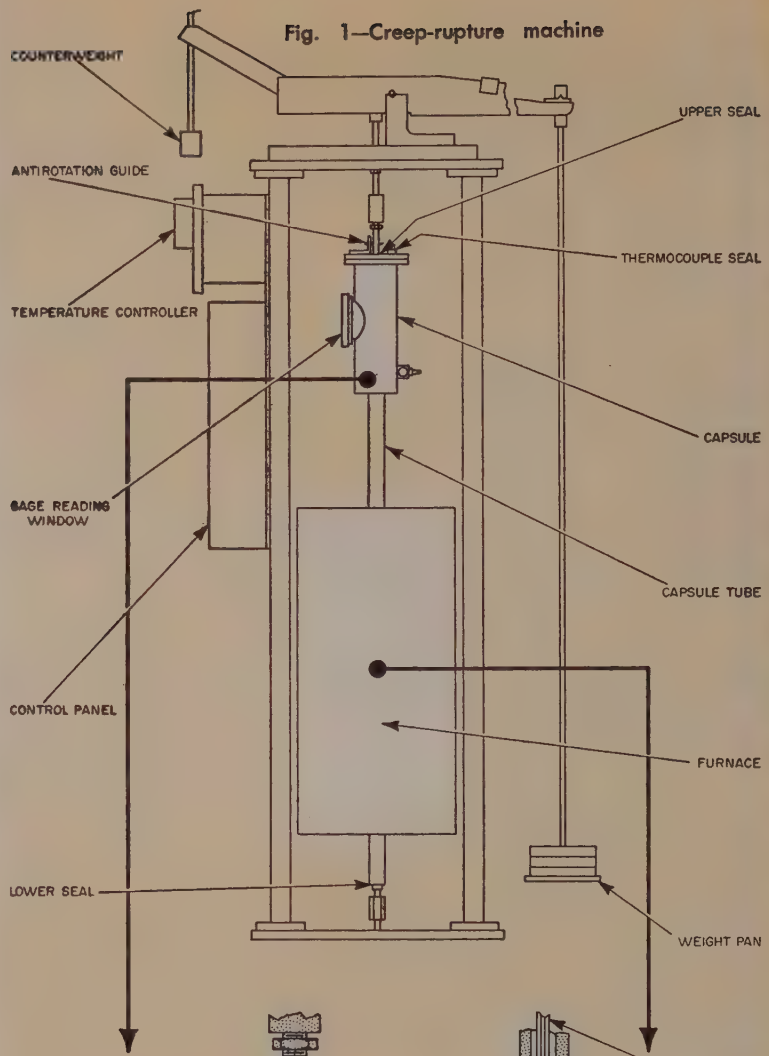
SUBSTITUTE—A New Jersey plant is set to turn out 1000 tons of synthetic mica the next 12 months. It's a start toward reducing U.S. dependence on foreign sources. Products of the synthetic material will withstand nuclear radiation and 1000°F. Crystal structure is too small for electronic tube use. A large-crystal synthetic is being developed.

BRIGHT PROSPECT—The general brightness level of industrial illumination will double in the next ten years (it doubled in the last ten), say Nela Park (GE) engineers. High frequency illumination installations will become common. GE has 4000 kw of 400-cycle installations in the planning stage. For large area lighting, its engineers say it has significant cost advantages over 60 cycles.

RESEARCH GUIDES—The American Society of Tool Engineers doesn't intend for its research to go astray. Each project has a steering committee whose function is to keep the project on the assigned track and press for usable results. Being investigated are metal cutting, boride tool materials, fog application of cutting fluids, plastic tooling, punch and die clearance and tool tip temperatures.

orking Outlook—p. 67 Market Outlook—p. 157

Fig. 1—Creep-rupture machine



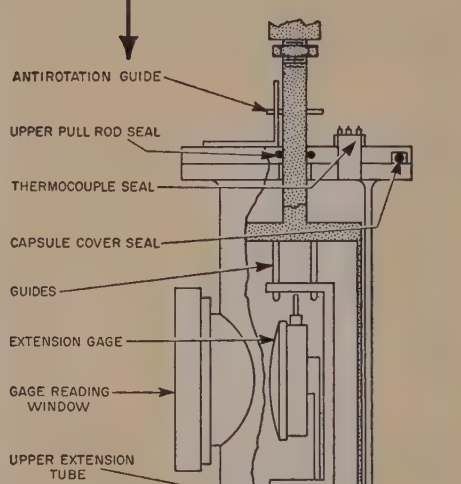


Fig. 2—Gaging mechanism

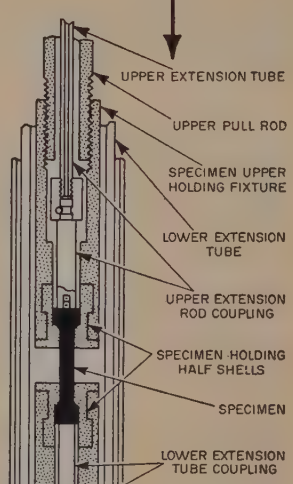


Fig. 3—Specimen coupling

Fig. 4—Bank of creep-rupture mach

How

REFRACTORY METALS come of age. Titanium and nium alloys are being use structural parts. Alloys of m denum and tungsten are rec attention for jet and rocke gines despite their relatively density. Vanadium, tantalum nium, columbium, though abundant and more expensiv finding engineering applicati

Important to the exploitati refractory metals is an eff means of evaluating their me ical properties at high te atures. But there is a hitch: metals are highly reactive t mospheric gases at elevated peratures.

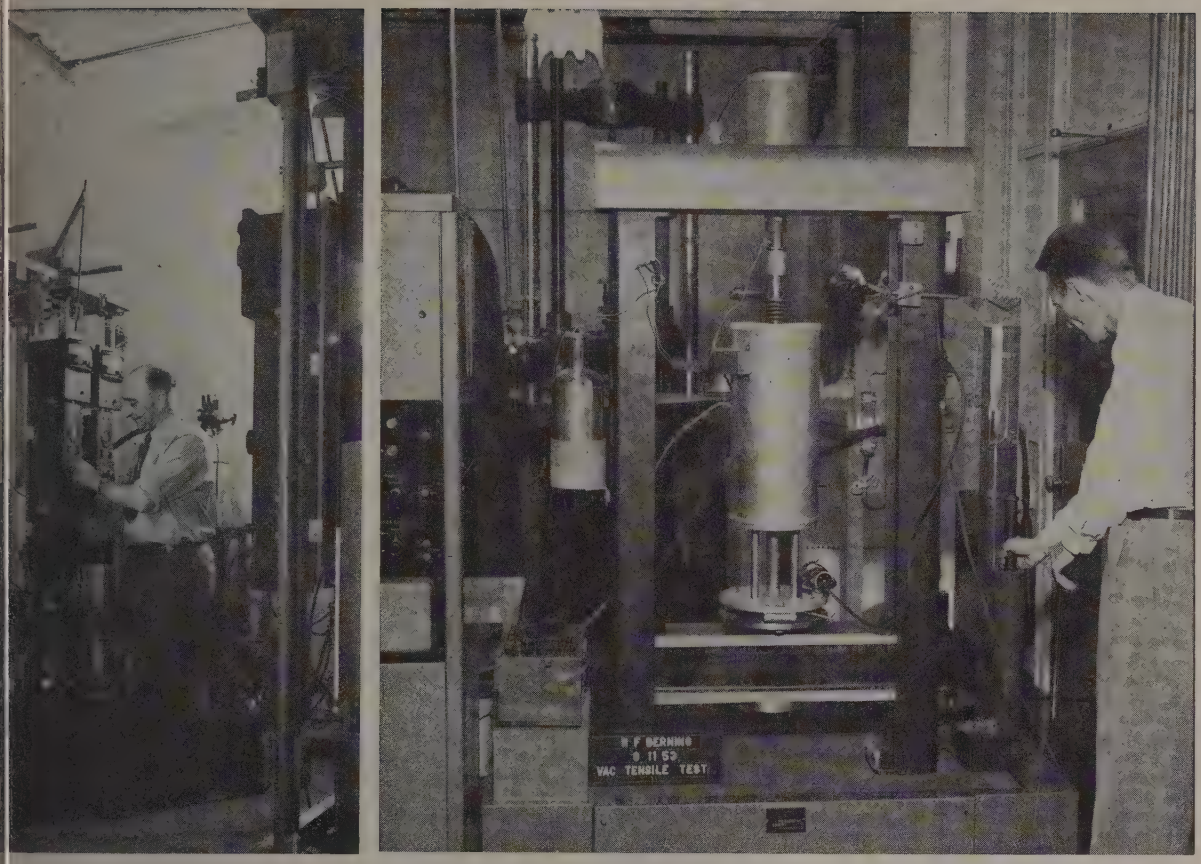


Fig. 5—Instron machine adapted for refractory metal tests

est Refractory Metals

By J. W. PUGH
General Electric Research Laboratory
Schenectady, N. Y.

Here is how General Electric ts them:

Tensile — Two tests are made. e creep-rupture test measures rate of deformation and the e to fracture for constant tem- ature and load on the sample. e short-time tensile test meas- s the load required to maintain constant rate of extension.

Apparatus must have two spe- l characteristics: 1. It must pro- e testing strings of sufficient ength at high temperature to nsmit the tensile force to the cimen. 2. It must perform the t in an inert atmosphere which l not contaminate the specimen. tmospheric attack has been solved at the GE research laboratory by enclosing the entire testing string in a vacuum-tight capsule. It must be sufficiently compact to fit inside an efficient tube furnace and long enough to locate vacuum seals at points where the temperature remains relatively low.

Creep Rupture — Fig. 1 is a drawing of the creep-rupture machine, one of ten used at GE's research laboratory.

The load application mechanism is a type common to these machines. The ratio of the lever can be adjusted to 5 to 1 or 20 to 1. It must be accurately balanced, so that it exerts constant force on the pulling string which is anchored to the base plate. Loads are applied by releasing a jack under the weight pan after the correct weight has been fastened to the pan.

Capsule — The pulling string (which includes the strain measuring devices) is almost completely enclosed in a vacuum-tight capsule. Pull rods enter the capsule through O-ring seals. The upper pull rod is a tube, the top extension measuring rod being contained within it while the bottom extension tube surrounds it.

Concentric tubes link the specimen to a strain gage which the operator can read through a win-

dow. Note that the upper extension rod linkage moves away from the gage, so that at fracture the gage is not damaged (Fig. 2).

Specimen Linkage — Cylindrical button-head specimens are made with threaded ends. They are screwed to extension rod couplings, which, in turn, are pinned to the extension rods (Fig. 3).

Load is transmitted to the specimen by half shells inserted around it, pressed through a slot and turned to rest on a flange in the specimen-holding fixtures. The fixtures, in turn, are screwed to the pull rods which carry the load from the lever arm.

Specimen holding fixtures, pull rods, extension rod couplings and the half shells are made of S-590. Extension rods are made of Inconel; the capsule shell, stainless steel tubing.

Assembly—The specimen string is assembled outside, then inserted through the top of the capsule. After that, the stationary lower pull rod is sealed off by tightening it down on an internal Neoprene gasket with an external nut. When the capsule cover seal is bolted down at the top, the assembled capsule can be evacuated to about 1 micron of pressure and filled with argon.

Mounting the capsule in the machine is done by rotating the tube furnace to a 45-degree angle, inserting the capsule and rotating the loaded furnace back to the vertical (Fig. 4). When the capsule is mounted in the furnace, it can be anchored to the base plate and attached to the lever assembly.

When the load is applied, upper pull rod moves slowly through the lubricated O-ring in the cover plate. Friction at seal is minor and is included part of the tare weight calculat when the machine is calibrated

Heat Control—The furnace be operated up to 2000° F, be controlled by thermocouples ins the capsule in the vicinity of specimen. Four couples are us One for controlling and three measuring temperature.

Three Nichrome coils do heating. Power may be adjus to the proper level and coil tribution by a Variac and rheostats. Automatic control provided by a Brown Pyrov

Short Cut from Lab to Mill

IDEAS for materials are born in research laboratories. But before a manufacturing department can use a new material in a product it must have many answers. Work leading to them must be on a scale approaching industrial conditions.

That's the reasoning back of the new look at metals at General Electric. A few weeks ago GE dedicated its new metals and ceramic building at its research laboratory in Schenectady. At first glance the $5-million investment seems more like a factory than a laboratory. The universal pilot plant uses the latest processes to fabricate about any metal or ceramic in semicommercial quantities.

Always in mind is the objective of bridging the gap between test tube and production quantit This is the weak spot in most research activ says GE management.

Freedom—Standard and special equipment operated under laboratory conditions, with fr dom from production schedules. Emphasis is measurement and control.

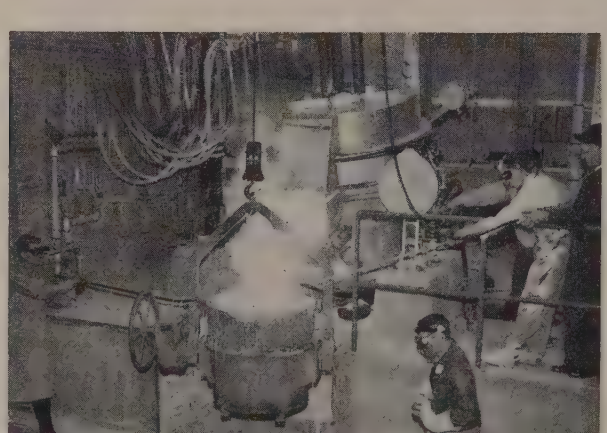
Ideas do not come to the new building to st They are forwarded on to operating departme for use. Or if there's trouble, they go back the basic laboratory for more investigation.

Quick Change—The new building was put gether like Erector set pieces to permit quick sembly and easy alteration. Many bolting ho from floor to roof, give the needed versatility. short notice, traveling cranes can lift structu members into place and move heavy apparatus

Research laboratory personnel worked clos with machine designers to come up with equipm to perform "conventional" operations with "unc ventional" materials.

Working—For example, some superalloys are brittle as glass right after they are cast. If ingot can be deformed initially, it does not sh ter and fly apart, and can be handled by ordina methods until it ends up as a jet engine buc or some other shape.

The hydraulic extrusion press that does t work is a 1250-ton unit designed for fast ext



Scientists, laboratory assistants and skilled tradesmen w side by side on experiments in this one-ton arc furn

ntroller. About 0.8 kva main-ins the furnace at 2000° F.

Adapted — Short-time tensile sts on refractory metals are ade by an Instron testing ma-ine. It has been adapted to high mperature work by building a be furnace to fit on its moving osshead and by enclosing the st string in a vacuum-tight cap-le (Fig. 5).

The lower pull rod is attached a linkage extending through an -ring vacuum seal which rests a groove at the bottom of the psule. The moving seal at the p of the capsule is similar, ex-pt that it is retained in a groove t in the pull rod linkage.

Round button-head specimens e held in the fixtures by split llars; sheet specimens are held between the serrated faces of a split grip. A small pin inserted through the grip and the specimen aids in aligning the specimen and shows telltale distortion if the grip slips during the test. Load bearing members in the hot zone are made of S-590; the capsule shell is stainless steel tubing.

Hot Test—When this apparatus is used for a high-temperature test, the upper pull rod is pinned to the load measuring cell in the stationary crosshead. The lower pull rod linkage is pinned to the moving crosshead.

Each coil of the three-coil furnace is supplied through a separate Variac so that uniform temperatures as high as 2200° F can be produced. Temperatures are measured by a platinum-platinum-rhodium thermocouple, sealed into the capsule by a Wilson-type vacuum seal. The thermocouple is next to the specimen. A vacuum of less than 10 microns is usually used, although an argon atmosphere is possible.

Frictional effects, weight of the upper part of the string and the effect of the vacuum on the load measurement are compensated for by calibration adjustment of the machine, made prior to loading each specimen.

Data are recorded autographically, so that the operator is free to check on pressure and temperature. Load versus time is plotted, and this can be converted to stress-elongation or to true stress-strain since the movement of the crosshead is constant.

---

on of superalloys. Other examples of special quipment are 10 and 16-in. rod mills. They de-rm superstrong alloys by operating rapidly. hunks of metal at high temperature are brought own to size before they cool to a point where xtreme strength properties become a deterrent deformation.

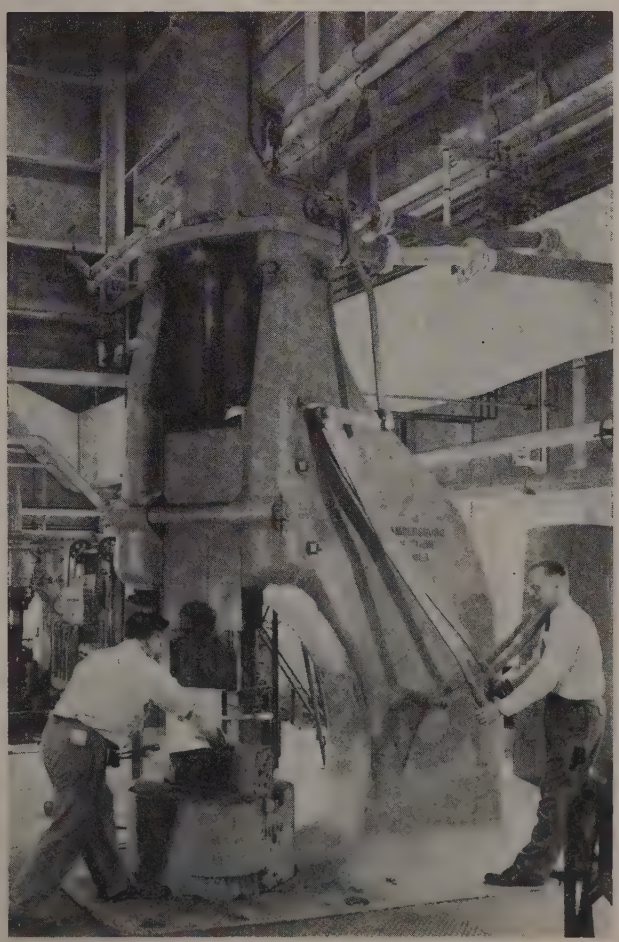
Rolling—Sometimes evaluation requires the con-ersion of large quantities of metal into thin sheet. egular hot-rolling mills will do it; several are sed. A new planetary mill also was installed. will reduce slabs 1 in. thick to ⅛-in. ribbon in ne quick operation.

A 3-phase, alternating-current arc furnace was nstalled to make 1-ton heats of steel under in-ustrial conditions. This makes it possible to turn ut commercial trial lots of new alloys (such as ilicon steel) for technical and economic evalu-tion.

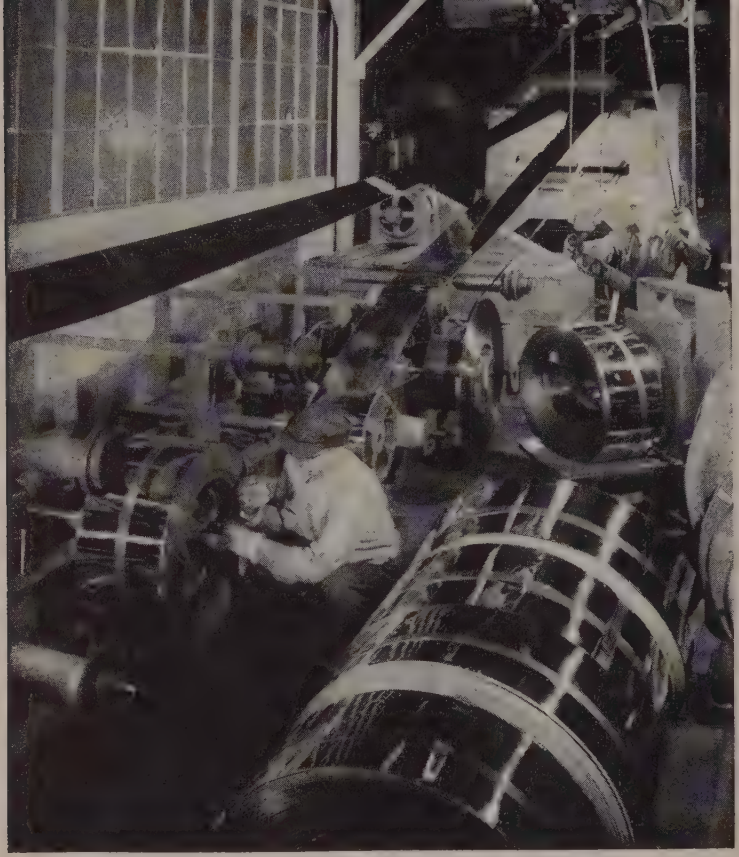
Vacuum, Too—Furnaces holding from 10 to 400 are available for melting in vacuum to avoid tmospheric contamination.

Each operation in the new laboratory is headed y a technical staff member. He is helped by killed metal processors and laboratory assistants ho follow details. This places responsibility to ake the new idea work squarely on the shoulders f the scientist who had the idea.

Guarantee: From beginning to end, the best echnical understanding is applied to every project.



his 2500-lb forging hammer is used for hot working in-ots to study physical properties on a production scale



Brass-coated strip as it comes from the continuous buffing line

Shiny Picture for Brass-Plated Strip

It can replace solid brass in decorative uses without loss of product quality. Oxidized brass coatings can be colored to give a variety of effects

By E. J. ROEHL
Manager of Technical Development
Thomas Strip Div., Pittsburgh Steel Co.
Warren, O.

BRASS has long been recognized for its decorative qualities; platers have been dressing up products with its gleam for over 100 years. Now, something new has been added—brass-plated steel strip.

This product combines the attractive features of brass with the wide utility and economy of cold-rolled, strip steel. It can be formed easily into hundreds of shapes.

At Thomas Strip Division of Pittsburgh Steel Co., Warren, O., a 0.0002-in. coating of brass is electrodeposited in 1 to 1½-minutes on continuous strip. The company has lines for electroplating continuous strip steel with copper and zinc (as well as other metals).

Old Way — For a number of years the company produced brass-coated strip by a duplex process. The strip was plated with copper on one line, then with zinc on a second line. Coils were heated to interdiffuse the coatings to produce brass and then put through a pickle line to clean up the surface.

This process, while costly, w used because it was better a cheaper than brass plating fro conventional solutions which ha a depositional rate too slow to economically feasible.

Low Efficiency — Convention brass plating baths generally o erate at low current densities a cathode efficiencies. Brass anod polarize at current densities abo 5 amp per sq ft in convention baths.

When this happens, their ef ciency is reduced; they do n

A Few Uses for Brass-Coated Steel

Carpet edging	Table lamps	Door chimes
Handbag frames	Curtain rods	Ash trays
Door hardware	Novelties	Lamp tubing
Nameplates	Weather strip	Bird cages

ply metal to the solution at a
e equivalent to the rate at
ch it is being plated out at
cathode; they also throw the
h composition out of balance.

lath Composition — Attempts
e been made to improve the
ed of operation of the brass
h by raising current densities
efficiencies. These attempts
e been mainly along the lines
increasing the concentration of
bath, holding the "free" sodi-
cyanide concentration as low
possible and operating at high
by maintaining a low and care-
ly controlled concentration of
ium hydroxide.

These bath compositions had to
held within narrow limits to
sistently produce satisfactory
or and composition of the de-
it. None has been commercial-
successful.

New Bath—Thomas Strip has
veloped a new bath composition
ich involves high concentrations
sodium and copper cyanides,
ium hydroxide in appreciable
ounts to give high solution con-
tivity and a low concentration
zinc.

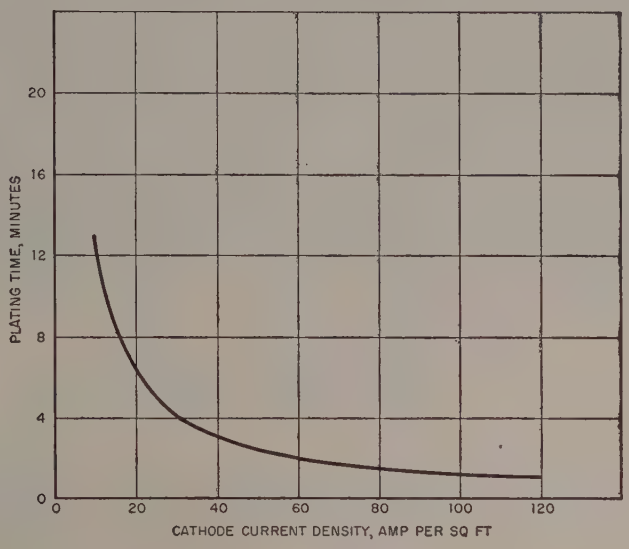
This bath plates continuous steel
ip at 120 amp per sq ft. Un-
quiescent conditions, the an-
s begin to polarize at about 80
ps per sq ft, but under plant
nditions where there is move-
nt of the solution, polarization
ubles are not encountered.

Finishes—Brass-plated strip is
oduced in three finishes—nat-
al, planished and buffed. Widths
nge from ¼ to 22 in.; thickness-
range from 0.005 to 0.040 in.

The natural finish comes direct-
from the plating operation and
widely used where luster is not
portant or where additional fin-
ning operations are to be done
uring fabrication. A finishing
eration gaining interest is oxi-
zing to produce a variety of col-
s and shades, followed by lac-
ering.

The planished surface is a semi-
right finish, widely used as a
al products finish. Buffed is the
ightest finish available.

Embossing—A new finish being
ed for brass-coated steel and for
her cold-rolled or plated strip
eel is an embossed pattern. It
rolled into the steel. A number
designs are available. New de-



The curve shows the relationship between the cathode current density and the time required to deposit a 0.0002-in. coating of brass from the bath composition shown below. At 120 amp per sq ft, it's 1 to 1½-minutes. Conventional baths, which cannot be operated much above 30 amp per sq ft, require 5½ to 20 minutes to deposit the same coating

Typical Bath Composition

Constituent	Ounces per gallon
Sodium cyanide (total)	12—18
Copper cyanide	10—14
Sodium hydroxide	6—10
Zinc oxide	0.4—1.2
Excess sodium cyanide*	0.5—2.5

Solution	Operating Range
Ratio of Cu:Zn in solution	10—20:1
Temperature °F	165—200
Cathode current density, amp per sq ft	25—150

*Excess over that required to form $Na_3Cu(CN)_3$

signs can be developed from customer patterns.

More interesting possibilities are offered by the oxidation of embossed brass-coated steel to produce various colors. The brass can be colored to produce a uniform appearance, or it can be colored and then highlighted to give a variety of effects.

Brass-coated steel offers good protection against corrosion for parts in process and lends itself readily to production of small stampings, drawn parts, tubing and roll-formed sections.

Guide to Good Sawing

SELECTION of bandsaw blades for metal cutting should be guided by the material to be cut. The number of teeth, their set and operating speed vary with the job.

The accompanying table is suggested as a guide. Recommendations are based on average conditions; users operating under special conditions may find that slight variations in speed, teeth or set will increase cutting efficiency or blade life.

Blade Speed — Slow speed is needed for metal sawing. Steel requires a slower speed than soft metals; thick sections demand a slower speed than thin sections.

When blade speed is too high, teeth are not given time to bite into the metal. The result i skidding, rubbing action w fails to cut the metal and l to rapid dulling of the blade. a rule of thumb, the softer metal, the higher the cut speed.

Teeth—Blades for cutting metal should be selected so t always will be at least two t in contact with the edge of work. If teeth straddle the w they will be torn off.

Three sets commonly are for metal-cutting blades. Bl with every tooth set, alterna right and left, can be used for ting all the softer metals. R lar or raker set blades have unset raker tooth to each pai set teeth, the raker tooth ser to keep the cut clean. This s used for cast iron, steel, M etc. The wavy set blade has t set in groups, one set of t forming a wave to the right, y the next set forms a wave to left. This style blade is used cutting thin metals, such as metal tubing and radiator cor

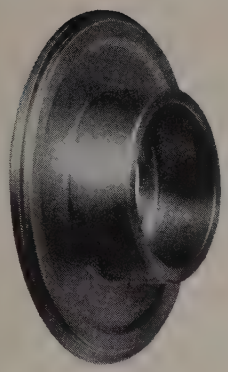
Selection—For the small or eral shop, a good selection blades is 14, 18 and 24 teeth inch, with the 18-tooth regula blade best for all-round w Hard-edge blades should be carded when worn. It is not tical to sharpen them.

When sawing curves, the b must be selected with regar the radius it must cut. Since metal cutting is in the form straight lines or mild curves, best all-round blade is ½-in. w

Material	Speed (sfpm)	Teeth	Set*
Aluminum alloy gates	125	8-10	Ets
Aluminum sheets	2200	8-10	Ets
Asbestos sheets	125	8-10	Ets
Babbitt	340	10-14	Reg.
Bakelite	340	5-10	Ets
Brass; cast, soft	340	12-14	Ets
Brass; cast, hard	125	18	Wavy
Brass sheets and tubing	340	14-18	Ets
Bronze; manganese, etc.	125	10-14	Reg.
Bronze moldings	175	18-24	Ets
Builders board	2200	12-14	Ets
Brake lining	125	8-12	Ets
Carbon tool steel	80	14	Reg.
Cast iron	125	14	Reg.
Cold-rolled steel	175	14	Reg.
Copper	175	10-12	Ets
Drill rod	80	14	Reg.
Fiber	340	8-10	Ets
High-speed steel	80	14	Reg.
Hose; canvas and rubber	2200	8-10	Wavy
Hose; metallic	250	18-22	Wavy
Iron bars; machine steel	175	10-14	Reg.
Iron sheets	175	18-22	Wavy
Malleable iron	175	12-14	Reg.
Plymetal	175	14	Ets
Mica	175	10-14	Ets
Monel metal	125	10-12	Reg.
Nickel steel	80	12-14	Reg.
Pipe	125	18-22	Wavy
Radiator cores	340	18-22	Wavy
Rubber; hard	340	10-14	Ets
Slate	80	10-14	Ets
Steel moldings; special shapes	125	18-24	Wavy
Steel tubing	125	18-24	Wavy
Transite	175	14-18	Reg.

*Ets—Every tooth set; Reg.—Regular set; Wavy—Group set
Source: Rockwell Mfg. Co.

carbides?

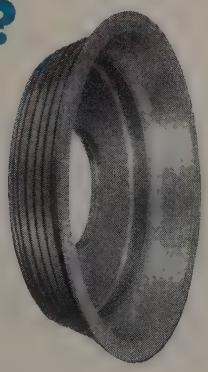


IMPELLER HUB — 4" diam., 1¼" long, from SAE 1146 annealed steel forging. JOB ANALYSIS determined multiple-spindle chuckers with ALL CARBIDE tooling.

11 operations on first side, on 6" Acme-Gridley 8-spindle chucker with double indexing and duplicate tooling. 2 pieces per cycle in 22½ seconds machine time — 320 pieces per hour.

17 operations on other side on single indexing 6" Acme-Gridley 8-spindle chucker. 26 seconds machine time — 138 pieces per hour.

high speed?

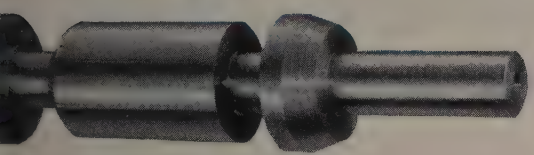


SEAL RING — ½" thick, from 2½" diam. steel 6150 annealed. JOB ANALYSIS classed this as single-spindle job with HSS tooling.

5 shoulders rough and finish-formed to .002 tolerance, seat diam. held to .0005 tolerance, on 3½" single-spindle Acme-Gridley bar-type turret lathe. 7 minutes machine time — 8 (plus) pieces per hour.

Spindle speed automatically changed 4 times during cycle to provide suitable speeds and feeds for required finish.

or BOTH?



SHAFT — 7¾" long, from 1⅞" diam. steel 6250 annealed. JOB ANALYSIS indicated single-spindle bar-type turret lathe, with part CARBIDE and part HSS tooling.

10 operations including deep forming, turning and form-turning on 3½" single-spindle Acme-Gridley bar-type turret lathe: 5 minutes 46 seconds machine time — 9 (plus) pieces per hour.

5 automatic changes of spindle speed during the cycle provided speeds and feeds best suited for using both HSS and Carbide tools.

let the job analysis dictate the right tooling method

(And the Right Machine)

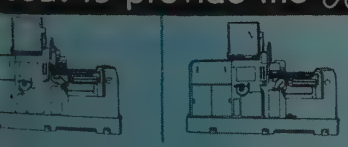
All Acme-Gridleys are built with a rigidity factor to withstand the pressure of *any* cutting tool yet devised—at speeds as fast as modern cutting tools can "take it." With such a margin of power, speed and stamina built into each of National Acme's COMPLETE LINE of multiple- and single-spindle bar and chuck-type automatics, you can safely let the job analysis dictate:

1. **The best tooling method.**
2. **The machine best suited to produce the job most economically.**

And you can be equally sure that tooling recommendations from National Acme will be based upon sound, experienced judgement.

If you would like a complete job analysis, we'd be glad to give you the benefit of our experience.

JOB: to provide the *Right Machine* for YOUR JOB



Acme-Gridley 4, 6 and 8 Spindle Automatic Bar and Chucking Machines • Fully Automatic Turret Lathes (Bar and Chuck Type) • Hydraulic Thread Rolling Machines • Automatic Threading Tools • Switches • Solenoids • Contract Manufacturing.

THE NATIONAL ACME COMPANY

189 EAST 131st STREET • CLEVELAND 8, OHIO

Charging floor of oxygen-blown converter plant of McLouth Steel Corp. at Trenton, Mich. The hood immediately above the nose of the converter is a water-cooled section with refractories which lead the gases to the gas cleaning system

Ways To Boost Tonnage

By JOHN D. KNOX
Steel Plant Editor

BEFORE turning any power shovels loose, steelmakers planning to increase open-hearth and electric steel production will find it profitable to consider these reports. They were presented at the annual meeting of the Association of Iron and Steel Engineers, Chicago, Sept. 26-29.

Take the paper, "Increased Steel Production from Desiliconized Hot Metal," by E. C. Wright. Prof. Wright heads the department of metallurgical engineering, University of Alabama.

He explained the influence of desiliconized hot metal (wash metal) on the production rates of furnaces. Various amounts of wash metal are included in the charge instead of normal hot metal containing 4 per cent carbon, 1 per cent manganese, 1 per cent silicon at the usual mixer temperature of 2450° F.

When normal hot metal is blown with oxygen to about 3 per cent carbon, 0.40 per cent manganese and 0.20 per cent silicon, the temperature rises to 2950° F. Adoption of this practice, he contended, would increase production capacity at least 65 per cent for present open-hearth installations.

Ups Output—An open-hearth plant producing 1 million tons of steel per year would produce 1.4 million tons with the use of 60 per cent wash metal. Based on 350 operating days per year, production would amount to 4000 tons of steel per day. This would require 2933 tons of ordinary hot metal to yi 2640 tons of wash metal. The siliconizing operation could be d in one 30-ton converter, wh would produce 150 tons of w metal per hour (3600 tons day).

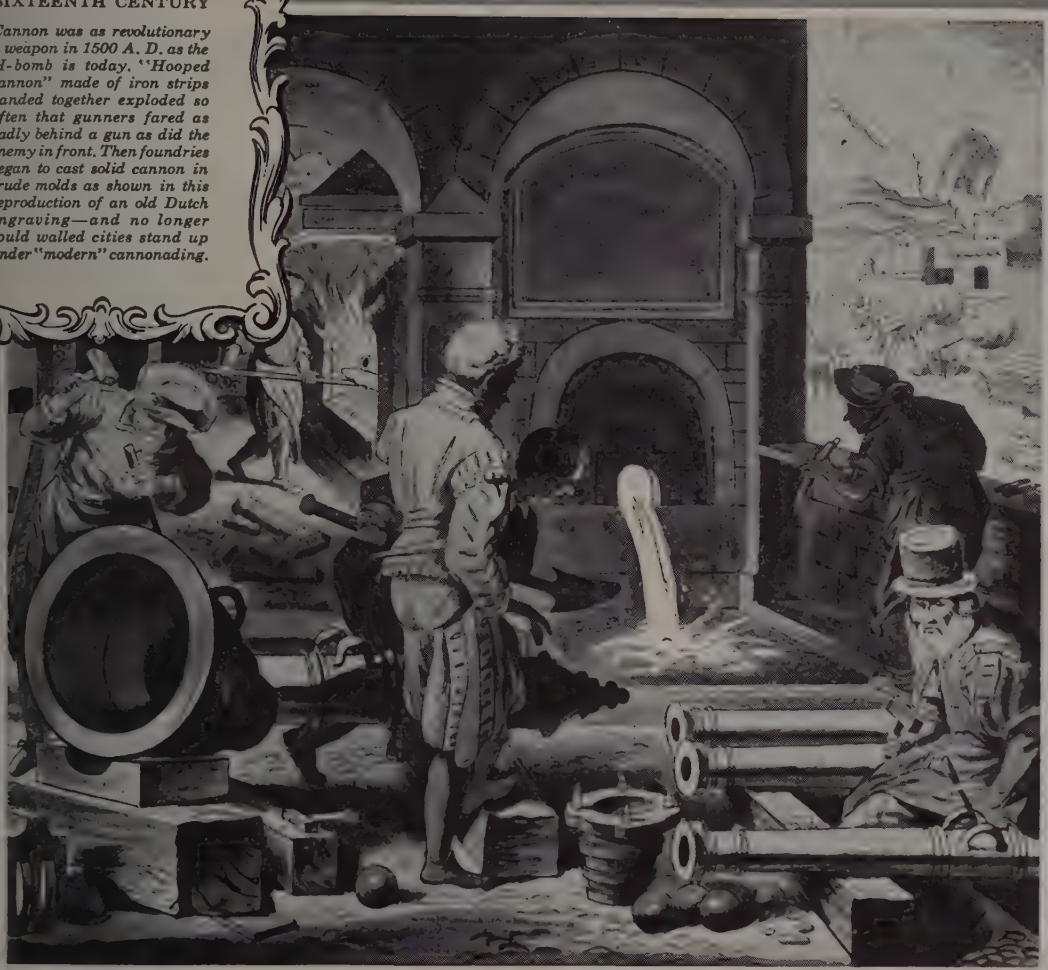
If high-pressure oxygen is us no blowing equipment would be quired.

It was estimated that such an stallation would cost about $3 r lion. This represents an investm cost for extra output of about $3 per annual ingot ton, compa with the present $30 to $40 ton for new open-hearth insta tions. Comparable results seem p sible in electric furnace pla where hot metal is available.

Production of steel in convert

CANNON FOUNDRY
SIXTEENTH CENTURY

Cannon was as revolutionary a weapon in 1500 A. D. as the H-bomb is today. "Hooped cannon" made of iron strips banded together exploded so often that gunners fared as badly behind a gun as did the enemy in front. Then foundries began to cast solid cannon in crude molds as shown in this reproduction of an old Dutch engraving—and no longer could walled cities stand up under "modern" cannonading.



Crafts and craftsmen through the ages

NUMBER FIVE OF A SERIES

Enlargements of illustrations available upon request.

Basic Refractories not only furnishes its customers with the finest refractories available, but also employs skilled craftsmen —men with practical steelmaking experience— to insure that the use of these products gives full value.

GRANULAR BASIC
REFRACTORIES

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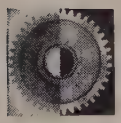
REFRACTORIES ENGINEERING AND SUPPLIES, LTD. — EXCLUSIVE CANADIAN AGENTS



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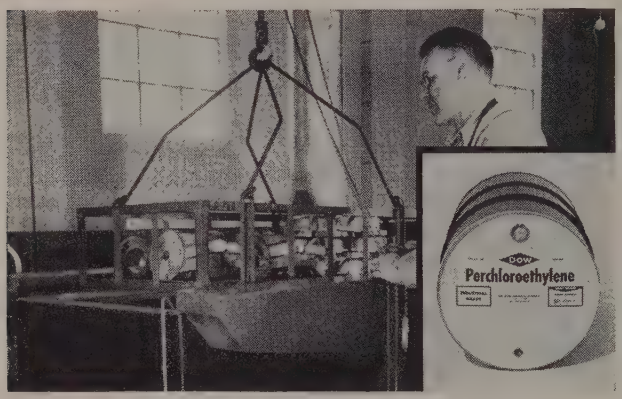
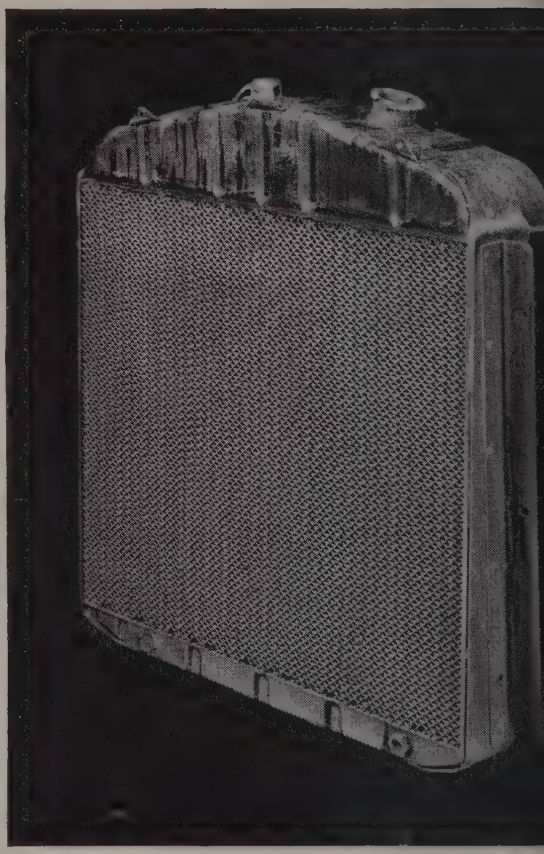
Heavy buffing compound residue is generally tough to remove . . .



but comes off quickly and economically with vapor degreasing . . .



leaving parts clean, bare, dry, ready for next operati

when parts are heavily contaminated • when they're thin-gauge me

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- **Safer—nonflammable**
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DOW

blown with practically pure
en is steadily increasing, ac-
ng to C. R. Austin, manager,
en converter department, Kais-
gineers, Oakland, Calif.

resees Growth—During 1949-
about 12,000 tons of steel
made experimentally by two
ian steel companies. In 1953
made 365,000 tons. McLouth
Corp., Trenton, Mich., started
uction without previous pilot
operations in December, 1954.
Austin estimated the combined
uction of the Austrian plants
McLouth in 1954 at 750,000
tons. In his opinion, the com-
production will approach 1.7
on tons in 1955.

oduction at McLouth is rising
month. As many as 32 heats
ay have been made.

ving to the extremely fine
cle size of the fumes generated
ie oxygen converters, it was
ssary to provide for an ef-
it gas cleaning system.
appreciable length of the duct
ng from the converter to the
inder of the gas cleaning sys-
s mounted on wheels on an in-
d track, and the entire length
is section can be raised and
red at will. Immediately above
converter, the duct consists of
ter-cooled section with refrac-
s. Above this section the duct
fractory lined.

mediately below the water-
d section is an annular pipe
holes drilled at intervals to
it water to be ejected into the
s going to the gas cleaning
m.

the upper end of the movable
on of the hood is a two-pass
rkbox" in which numerous
r sprays are located. Dampers
provided in the ducts between
sparkbox and the tile washer.
three ducts coming from the
erters lead to a common main
h takes the gases to the tile
ier. From this washer gas goes
disintegrator and from there
stack. The disintegrator is
ne driven; exhaust steam goes
ie same stack as the effluent
s. The general effect is that of
ud of steam issuing from the
.

de Hole Provided—The pouring
tice from the converter ves-
s different from that in the
bessemer operation. A pour-
ole is provided in the side of
the converter opposite the charging side. After blowing a heat, the majority of the slag is poured off through the converter mouth into the slag pot on the charging side of the vessel. The vessel is turned to the opposite side so the slag remaining in the vessel is below the vessel mouth, and steel runs out the pouring hole into the teeming ladle. After the metal is out, the remaining slag is emptied through the vessel mouth into the slag pot.

Blast furnace operators were brought up to date on recent developments in sintering and pelletizing by E. N. Hower, manager, industrial department, Dravo Corp., Pittsburgh. He co-authored a paper on this subject with J. A. Anthes, process engineer, Dravo.

Mr. Hower mentioned that one of the most satisfactory ways to increase the production rate of sinter per unit area is by increasing the bed permeability. For a given bed depth the permeability is a direct function of the amount of air blowing through the bed and an inverse function of the amount of suction required to pull this air. An increase in permeability gives a higher sintering rate without a requirement for a higher amount of suction. This means that increased fanpower is kept to a minimum.

Further Improvement—When the sinter mix contains a large amount of fines, improved permeability can be obtained by "micropelletizing" these fines by secondary mixing in a drum similar to that used for pelletizing. When the proper amount of water is added, this device produces small seed pellets from the finest material and leaves the coarser constituents relatively unaffected. This not only gives a higher permeability but reduces the amount of dust passing through the grates of the sintering machine.

This principle has been extended further by Jones & Laughlin Steel Corp. The ore is formed into small pellets of ⅛-in. diameter. Then it is sintered under conditions that fuse the pellets. The mass is quite porous and has advantages in ease of reduction and a high permeability on sintering machines.

Another method of improving permeability is by the use of a roll feeder. The material is distributed with a short drop onto the feeder by an oscillating conveyor belt. The short drop from the roll feeder places the material evenly on the sinter strand. This combination of two short drops gives little compacting and practically eliminates lateral variation in the permeability.

More Advantageous—The 8-ft wide machine is rapidly becoming standard for sintering tonnages of iron ore in excess of about 2000 tons per day, Mr. Hower stated. Use of larger machines in place of three or four smaller ones permits better control of sinter production, simplifies feeding problems, reduces the number of pieces of auxil-

Electronically controlled 48-in. contour turning lathe designed for shape rolls. Its carbide cutting tool is moved automatically by independent long and cross-feed motors controlled by stylus contact with the template in right foreground

iary equipment and decreases maintenance.

Several improvements in the durability of the sinter machine and auxiliary equipment have been made. They include a separately added hearth layer laid on grates ahead of the point where the sinter mix is added. Its advantages:

1. Increases life of grate bars and pallets.
2. Reduces the amount of fines drawn through the grates.
3. Causes sinter to come off the grates easily without sticking.

Another device which improves the life of pallets is the Lurgi-type lowering sprocket wheel at the discharge end of the machine. This device engages the pallets when they reach the end of the sinter strand and separates them from each other while they are lowered to the return track. This reduces the stresses from the pallets and gives the reduced impact loading on the machine's framework and building at the discharge end of the machine.

Something New—Mr. Hower announced that a new device for producing pellets has recently come into prominence—the pelletizing disc or pan. The pan, which is fed with powdered materials, slowly rotates on a tilted axis. The powder is sprayed with water as is the pelletizing drum. The action of the rotated disc has a classifying effect and produces a segregation of pellets. The larger pellets roll toward the rim of the disc and the smaller ones stay near the center or beneath the larger ones. When the disc becomes filled, only the larger pellets are discharged over the rim.

Mr. Hower suggested that in the improvement of existing practice and in design of new plants, proper mixing is probably the most rewarding field for close study.

J. K. Seyler, superintendent, Hazelwood cold finishing department, Jones & Laughlin Steel Corp., Pittsburgh, spoke on "Hot Extrusion of Carbon Steel Solid Sections." He pointed out that the process requires either 4 or 5-in. billets for the press, predicated on the weight per foot range of ½ to 12 lb.

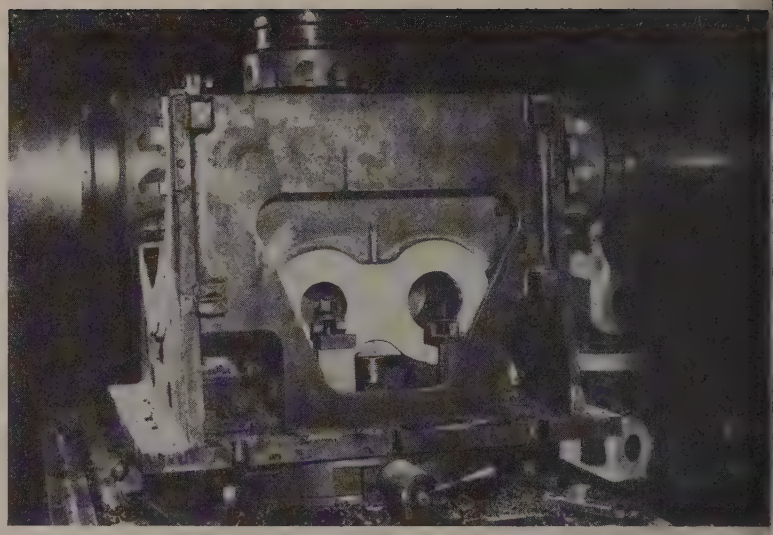
Billet length varies from 4 in. in diameter by 5 in. long to a maximum of 5 in. in diameter by 20 in. long. Length is determined by the extrusion ratio of the section and the desired length of the as-extruded product.

How It Is Done—Billets are heated in a triple-coil, 2-stage, 60-cycle induction-coil-type billet heater of special design which employs helium under low pressure as a protective atmosphere. The unit is capable of heating carbon steel billets from room temperature to 2300° F at 4000 lb per hour.

Any steel that can be rolled can be extruded. Theoretically, it is possible to extrude any shape for which a die can be made. There are some practical limitations, such as sharp corners, thin fins and small inside radiuses. But by a combination of hot extrusions and cold drawing, the variety of sections obtainable is unlimited.

Some of the ways in which the process may be used to economical advantage are:

1. Processing materials that cannot be rolled, or are difficult to roll.
2. Producing small quantities insufficient to warrant setting up a rolling mill. This application is becoming more important with the scrapping of small hand mills in favor of the large, high-production mills.
3. Executing rush orders when the quantity is limited. The extrusion press can be set up quickly if proper dies available.
4. Producing sections that impossible or impracticabl roll. With cold-drawing, extrusion can be used to vantage to produce com cated sections. While the f cost may be high, the sec may represent practicall finished part and save chine work. Possibilities this application appear limited, and it is in this a where we find the grea amount of interest.



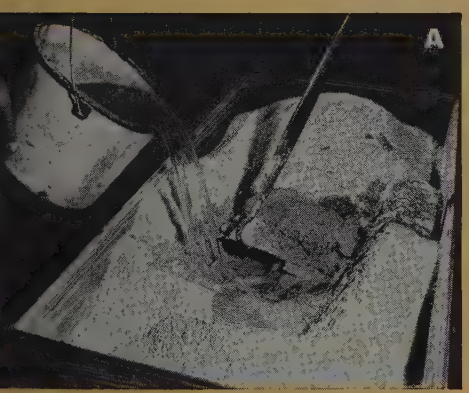
Profile Milling Time on Cast Steel Cut 79 Per Cent

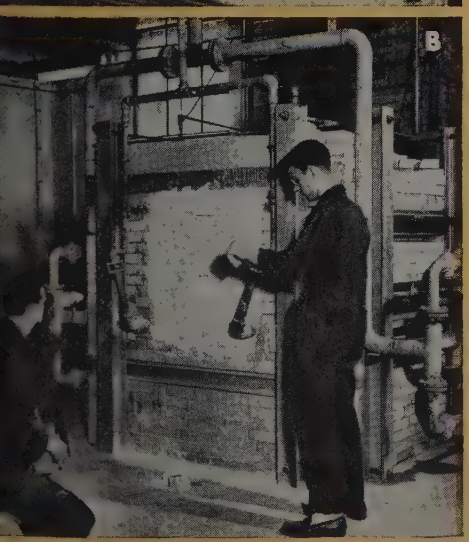
DeLaval Steam Turbine Co., Trenton, N. J., replaced two sets of high-sp steel cutters with one set of standard-face Kennamills to rough and f profile mill cast steel pump brackets. Results: Milling time cut fron hours to 65 minutes; cutter life up from two pieces per grind to five; for reconditioning cutter down from 3 hours to 1. The new cutters, made Kennametal Inc., upped speeds and feeds and produced a higher microinch fi

Rotation Is Key—J. MacGre board chairman, York-Gille Mfg. Co., Pittsburgh, describe new high-production method heat treating oil industry go It has resulted in large saving alloying materials, since mo denum additives are no longer u in the basic production; man nese has been reduced considera Higher and more uniform ten properties are being achieved. equipment that keeps the pipe continuous rotation through normalizing and quenching is heart of the process.

Under development is a spe mechanism. It will rotate rou squares, hexes, steel wheels, as they enter the normalizing nace to afford uniform heat minimize warpage distortion.

NEW B&W 3200 degree Refractory Concrete





Today, in some types of heating and melting furnaces, complete linings or sections of linings are subjected to temperatures over 3000 F and, with the trend to higher and higher operating temperatures, the problem of finding the most economical refractories for this "over 3000 F service" will become even more important.

Now, with B&W's new Refractory Castable-3200, furnace builders and operators can cut installation costs by using castable construction for services up to 3200 F. As easy to use as other B&W refractory concretes, B&W Refractory Castable-3200 can be poured or trowelled into place or applied with a cement gun.

Several years ago, B&W developed Kaocast, the first successful 3000 degree refractory concrete, to lead this high temperature castable trend. B&W Castable-3200, like Kaocast, is made with an alumina-silica base and is recommended for temperatures from 2600 to 3200 F. Because of its very high temperature properties, it is not recommended for temperatures below 2600 F.

If you have not taken advantage of the fast, low cost installation of castables for your high temperature requirements, we suggest you investigate B&W Kaocast and the new B&W Castable-3200. Your local B&W Refractories Engineer has all the facts.

A Mixed like structural concrete, B&W Refractory Castable-3200 can be poured, trowelled or gunned into place. • **B** High temperature laboratory furnace lined with B&W Refractory Castable-3200.

B&W REFRACTORIES PRODUCTS: B&W Allmul Firebrick • B&W 80 Firebrick
Junior Firebrick • B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars
OTHER B&W PRODUCTS: Stationary & Marine Boilers and Component Equipment
emical Recovery Units • Seamless & Welded Tubes • Pulverizers • Fuel Burning Equipment
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BABCOCK & WILCOX
THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES 161 EAST 42ND ST. NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

R-930

Utility Fastening

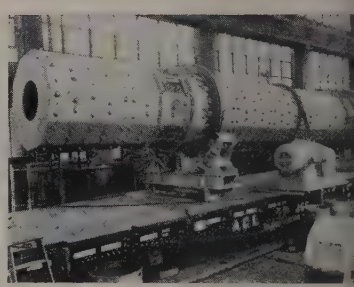
End-welded, threaded studs fa ten the liner plates in hu tumbling barrels

STEEL liner plates in huge rota tumbling barrels made by Ransohoff Inc., Hamilton, O., mu be easily replaceable but secu enough to withstand prolong punishment.

They are in constant jarri contact with heavy castings bei cleaned and desprued in a casca ing bath of sharp cleaning st and cleaning compound. For t fastening job, Ransohoff uses st welding.

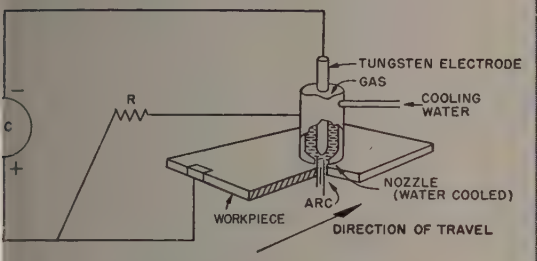
Each of four compartments in tumbling barrel is lined with separate replaceable plates of in. steel. They are held to the b rel by Nelson threaded studs (in. in diameter), which are e welded to the backs of the li plates.

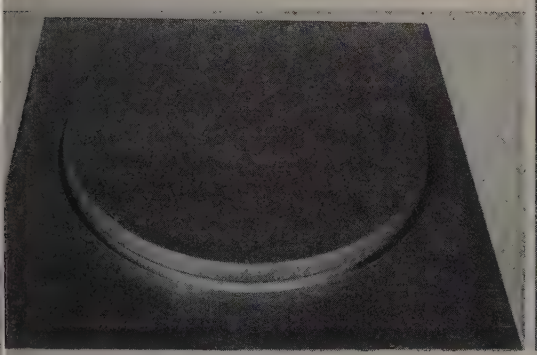
The studs project through ho in the barrel and are fastened the outside by nuts and grit-ti washers. Replacement of liners simplified because the nuts can reached easily, and the studs c not turn when nuts are remov —800 studs are used on the b rel.

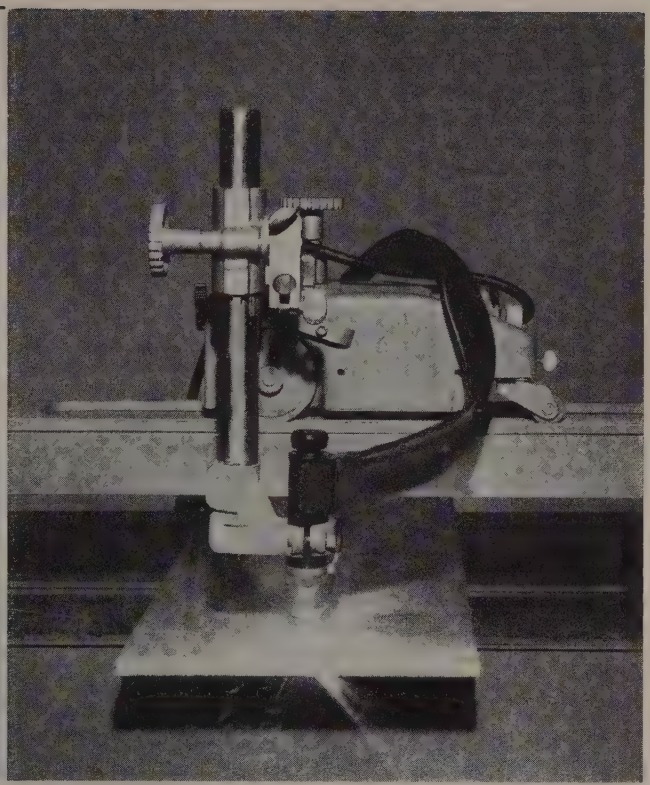


TUMBLING BARREL
. . . plates and studs take a beat

Stud welding improves the sign by leaving the faces of liner plates, which touch tumbled work, free of projectio The studs fulfill a further fast ing function by holding in pl chilled steel bars which are serted between the liner pla The bars project sufficiently carry the work up the sides the rotating barrel and create cascading action.







New look in aluminum cutting. Hydrogen-argon atmosphere concentrated around the arc from a tungsten electrode literally blasts its way through the soft metal. The cut looks like a sawed edge

rc Cuts Aluminum Like Butter

TYPICAL CONDITIONS

Aluminum Cutting with Mechanized Heliarc Torch

Open circuit voltage = 100 v
s mixture = 65 per cent argon, 35 per cent hydrogen

ick-ess	Speed ipm	Amps	Volts	Gas Flow*
-in.	300	320	70	50
-in.	125	320	75	60
-in.	75	320	77	70
-in.	50	320	80	70

feet per hr

THROW AWAY that chisel. A gas-shielded arc torch has just come on the market that can slice ¼-in. aluminum at 300 ipm and turn out an edge that looks like a saw cut.

The tungsten electrode torch is a variation on a standard Heliarc welding torch made by Linde Air Products Co. Changes have been made in the nozzle and collet and in the electrical circuit. It would be possible to convert welding torches for cutting, but for the present at least, Linde will sell units for cutting only, and will not furnish adapter kits.

Jet Stream—Cutting is done by a high-temperature, high-velocity constricted arc between a tungsten electrode and the work. The arc melts the metal; a hydrogen-argon gas jet blasts it away and prevents oxidation of the cut face.

So concentrated is the arc that on ¼-in. plate the kerf cut by the torch is only 3/16-in. wide at the top and ⅛-in. wide at the bottom. The edges of the cut are smooth and bright.

Mechanized cutting speeds range from over 300 to 50 ipm for 1 in. material.

Within Limits—This first version will cut aluminum up to 1 in. thick. Linde won't say what it will do with other nonferrous metals but admits that tests are "promising."

Torches and controls are available for either mechanized or hand cutting. For either type, no great

skill is required. The hand version has several features that make it easy on the operator.

Pilot Arc — A switch on the torch first strikes a pilot arc, so the operator can see where to start his cut with his face shield down. A time delay relay automatically switches on cutting arc and gas after a few seconds.

He can start the cut at the edge of the material or in the middle with equal ease. When starting in the middle, the burn through appears instantaneous, and the resulting hole is scarcely wider than the cutting kerf. Manual cutting speed on ½-in. plate is about 60 ipm.

Until he gets used to it, the operator may have difficulty maintaining the arc. As a safety feature, it automatically cuts out when it has no metal to cut, but can be restarted immediately by a button on the torch.

Mechanized Cutting—Linde has a simple track-riding dolly for

Torch is made in hand as well as machine-operated versions

mechanized cutting. It's their standard Oxweld machine carriage with special gearing for fast cutting speeds (see table).

Gas mixture for machine cutting is 65 per cent argon, 35 per cent hydrogen. For manual cutting, it is changed to 80 per cent argon, 20 per cent hydrogen. The power supply has an open-circuit voltage of 100 volts.

For easy portability, the control cabinets have been kept small and light. The one for the hand torch is not much bigger than a portable typewriter case.

MACHINE TOPICS

By R. F. HUBER, *Machine Tool Editor*

THERE'S a saying in the aircraft industry that when the first plane of a new type rolls out of the factory, it's obsolete.

At the other end of the production line, major and minor design changes are being made. What's more, designers are working on models to succeed the "new" one.

Stand-By — Engines for these airplanes have to be turned out on a high-production basis, but the production man in the engine plant has to standby, practically with wrench in hand, ready to adapt equipment for design switches.

Production requirements like these demand what R. A. Powley calls "adaptable special-purpose machine tools." Mr. Powley, general manufacturing manager, Aircraft Engine division, Ford Motor Co., Chicago, says this means: "A special machine designed for a specific engine part and operation, comprised of assembled components capable of being rearranged to meet new conditions caused by engineering changes in the engine part."

Specials in Stock—Speaking at the Air Materiel Command Industrial Conservation Seminar in St. Louis, Mo., he insisted that "adaptability" be the watchword of a new concept for designing special machines.

"This may be done," he continued, "by means of research, to establish a complete assortment of shelf items producible in quantity by machinery manufacturers to standard designs. The assortment would include: Bases, columns, hydraulic unit packages, dials, indexin mechanisms and work head

"Most adaptable speci machines could be assemble from standard component doweled in place. More com plex adaptable special ma chines might require a sp cial-base component, with th remainder of the machine a sembled from standard item

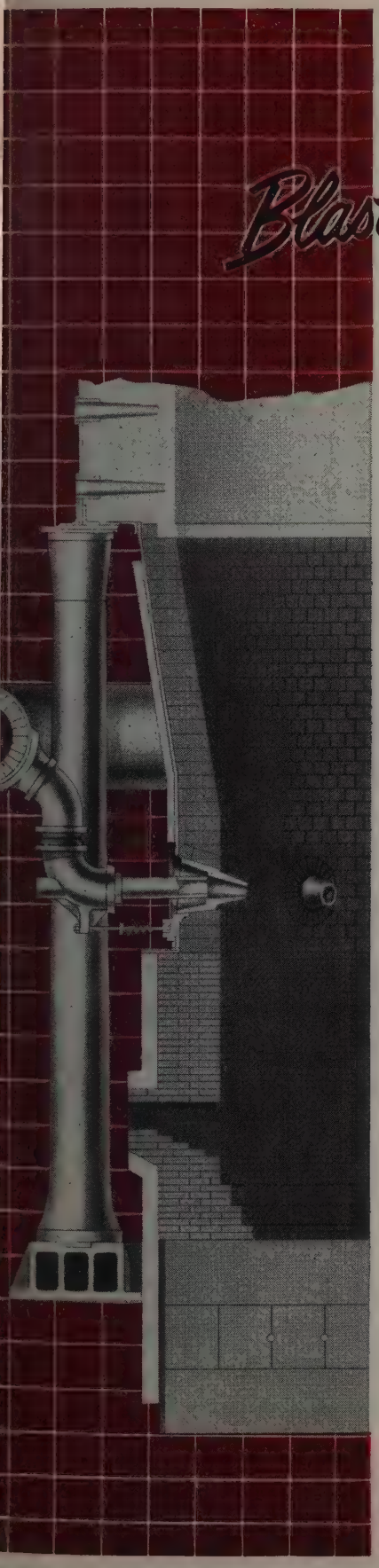
"When engineering change occur affecting the configur tion of the part, one or mo components could be mod fied or moved and the . . machine would be ready f production."

Mass Problem — Althoug he's talking about aircra production, the problem M Powley points up isn't excl sive with that industry.

It may be more acute aircraft than it is elsewher but this problem is so impo tant to the rest of industr that it accounts for a maj trend in the machine to business.

Both Ends — Builders a closing in on the proble from both ends. Builders special-purpose machines a almost unanimous on th point that the trend to wat concerns unitized, segmente or module construction. Th words are different ways saying they're all working the same direction.

From the other directio come builders of multipu pose, standard machine They are adding better co trols, gages, drives and com ponents to the inhere versatility of the machine Out of the combinatio they're getting higher pr duction without giving u the advantage of the m chines for short-run jobs.



Blast Furnace Capacities Increased up to 20%

WITH

NATIONAL
TRADE-MARK

CARBON LININGS

Increases of up to 20 per cent in rated furnace capacity have been achieved when carbon linings were installed up to the mantle — *within the same hearth and under the existing stack shell.* These increases were possible because of the superior refractoriness of carbon, which permits thinner wall constructions with consequent enlargement of inside furnace diameters.

Numerous construction cost analyses have shown initial installation of these "National" Carbon Linings to be more economical because internal cooling is eliminated, which results in much lower maintenance and operating costs.

In addition, "National" Carbon Linings maintain a smooth inner face with freedom from adherence which also helps to improve operating efficiency.

We will be glad to have our representative call at your convenience to supply complete information on "National" Carbon Linings for Blast Furnaces.

The term "National" is a registered trade-mark of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N.Y.

Sales Offices: Atlanta, Chicago, Dallas, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco

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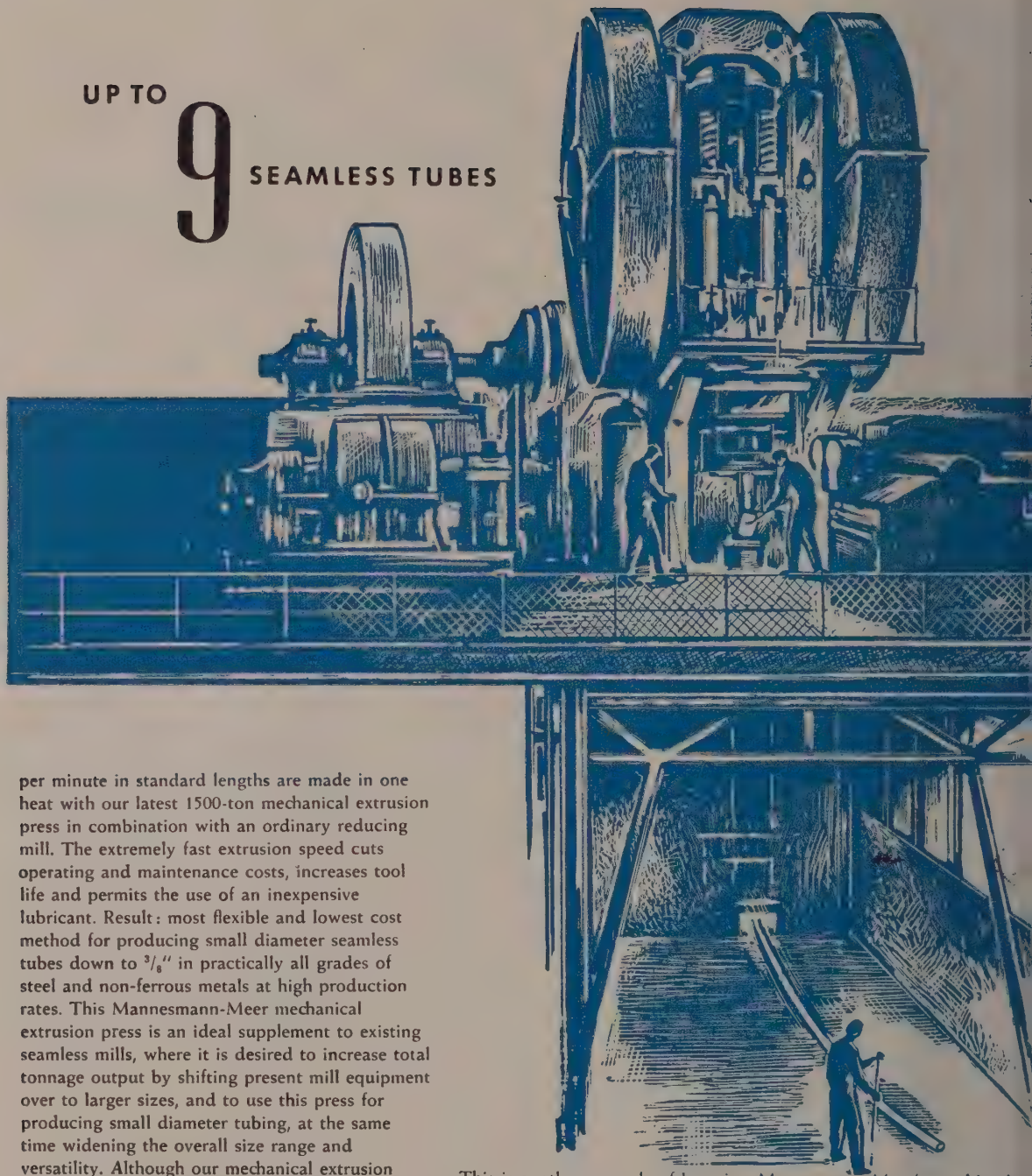
UP TO **9** SEAMLESS TUBES



per minute in standard lengths are made in one heat with our latest 1500-ton mechanical extrusion press in combination with an ordinary reducing mill. The extremely fast extrusion speed cuts operating and maintenance costs, increases tool life and permits the use of an inexpensive lubricant. Result: most flexible and lowest cost method for producing small diameter seamless tubes down to $^{3}/_{8}$" in practically all grades of steel and non-ferrous metals at high production rates. This Mannesmann-Meer mechanical extrusion press is an ideal supplement to existing seamless mills, where it is desired to increase total tonnage output by shifting present mill equipment over to larger sizes, and to use this press for producing small diameter tubing, at the same time widening the overall size range and versatility. Although our mechanical extrusion presses are in operation for over 25 years, continuous development is incorporated in today's press design to match present and future operating requirements.

This is another example of bringing Mannesmann-Meer's combination

- CREATIVE ENGINEERING
- DESIGN EXPERIENCE
- OPERATING BACKGROUND
- AMERICAN MANUFACTURING SKILL

to bear on your tube mill problems.

MANNESMANN-MEER

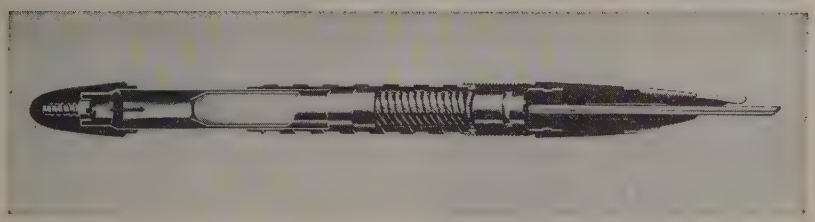
ENGINEERING AND CONSTRUCTION COMPANY, 900 LINE STREET, EASTON, PEN

WORLD SPECIALISTS IN HIGH-SPEED TUBE MILL MACHINER

ming shipments get a second sampling check for ID, and surface finish

Metalworking operations include cutting to length, tapering and milling a slit

Sampling Works for the Snorkel



MAKERS have troubles, too. the W. A. Sheaffer Pen Co. it the "snorkel," a retractable that gulps ink from the le.

ne reason is ink. People use kind, not just one the maker mmends. They range from strongly acid to the strongly line. Hydrochloric and sulric acids and corrosive dyes among typical troublemakers.

ot Sold on Gold—First versions he snorkel had a 14-carat gold , excellent for corrosion reance, but expensive and easily . Rejections of tube stock as high as 50 per cent. Need- A cheaper, stronger, more orm material.

he answer, worked out with erior Tube Co., was a high-el, high-cobalt alloy. A stand- alloy with superior corrosion stance, Sheaffer calls it "L607." as important as the material he quality control program the panies worked out.

lose Control—Most of the in-tion burden is shifted to the supplier, saving much handling and the cost of returning rejects. Superior inspects every inch of tubing and rejects any defective length. Then random samples of 75 ft of tubing are picked from each 10,000 ft and inspected inch by inch. If more than seven defects are found in the 75 ft, the entire 10,000 ft are reinspected.

Inspectors look for: 1. Outer diameter: 0.0625 ± 0.001 in. 2 Inner diameter: 0.052 ± 0.001 in. 3. Surface condition. The first two are checked by standard gages. Surface condition is judged visually by mutually agreed-on standards. Stock is shipped in random lengths of 5 to 12 ft.

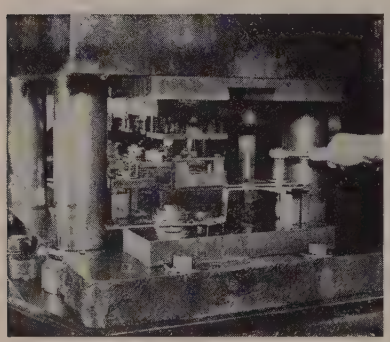
Double Check — When Sheaffer gets the shipment, it checks 75 ft from each 10,000. Theoretically, over ten defects in the 75 ft are cause for shipping the whole lot back to the supplier, but that hasn't happened.

Sheaffer eventually cuts the tubing into 2 in. pieces. Why, reasoned quality control, should we reject a whole length for a flaw that spoils only a few inches? Now usable portions of rejected lengths are salvaged.

Adding up the benefits, the company gets: 1. Better material at half the cost. 2. A rejection rate of less than one-half of 1 per cent. 3. Drastic reduction in inspection costs. 4. Enviable co-operation between supplier and user.

Line of seven 25-ton Henry & Wright automatic dieing machines at H. L. Judd division, Stanley Works, turns out wide variety of hardware parts

Press Shop Beats Job-Size Problem



Even complicated dies are changed in an hour. Die on this 150-ton dieing machine is easily accessible, an important change-over factor

ORDERS ranging from 1000 to 2 million parts go through the dieing machines at H. L. Judd division, Stanley Works, Wallingford, Conn. This range calls for high speed for the long runs and ease of die change for the short ones. It also calls for suitability for progressive dies, Judd production men say.

Load—Dieing machines get a new job when demand and complexity will justify the cost of the progressive die. Long die life on the machines also is a factor.

"Adaptability for short runs is a must," Judd's pressroom foreman explains. Quick die setup and high speed make it possible to set up and run the average small order in about 1½-hours. Even the most complicated die can be set in an hour. Speeds are as high as 1120 pieces a minute.

Long and Short—A nine-station die, for example, turns out 48 clothes closet rod brackets a minute. Made from commercial steel coil stock, the brackets are discs 2⅜-in. in diameter, with a semicircular flap to support the rod. Three holes are punched in the outer flange. This job consisted of 5000 pieces; it was set up and run off in about 3 hours.

The same 50-ton dieing mac that ran the brackets was earlier for a one-million piece of another item. Many run this type are made without i ruption, except to put in a coil of stock.

Cuts Operations—A bonus: gressive dies reduce secondary erations. A C-clamp, one of Ju big items, is blanked, formed pierced (and the gripping butt blanked) in a single opera Secondary operations for frame are reduced to welding threading.

The clamps are made in 1, 2 3-in. sizes. The frame is prod in two parts on an eight-sta die, then welded. The grip button for the clamp, which at the end of the threaded ba stamped from the scrap are the same time that the fram being formed.

CAR BY POLLOCK

Announcing...the Johnston Corrugated Cinder Pot

with NEW SHORT SUPPORTS

A new design development now makes the famous Johnston Corrugated Cinder Pot even longer-lasting than before. It is the brand new short support, already in use on Johnston pots in the plants of two leading steel producers.

The short supports are coupled to the pot at the same advantageous area as before: near the bottom, where the walls are coolest and strongest. However, instead of hooking over the top rim of the bail ring, the supports bolt into a set of lugs on its bottom surface (see photo). Thus, the pot walls have no opportunity to scrape or bang against the backs of the supports.

The Johnston pots with the new supports have all the other advantages that have led the steel industry to place more than 2000 of them in service. Advantages like curved sidewalls that resist cracking and inward creep...expansible saw-cut rims that strengthen the pot top...corrugations that expand and contract freely and dissipate heat faster...optional copper bottom-coats that prevent "stickers".

Why not learn more about the reasons behind the strong trend to Johnston Cinder Pots? We will be glad to explain our policy of engineered slag-handling equipment and how it can be applied to your own slag disposal problem. Simply write to...

MACKINTOSH-HEMPHILL
DIVISION OF
E. W. BLISS COMPANY

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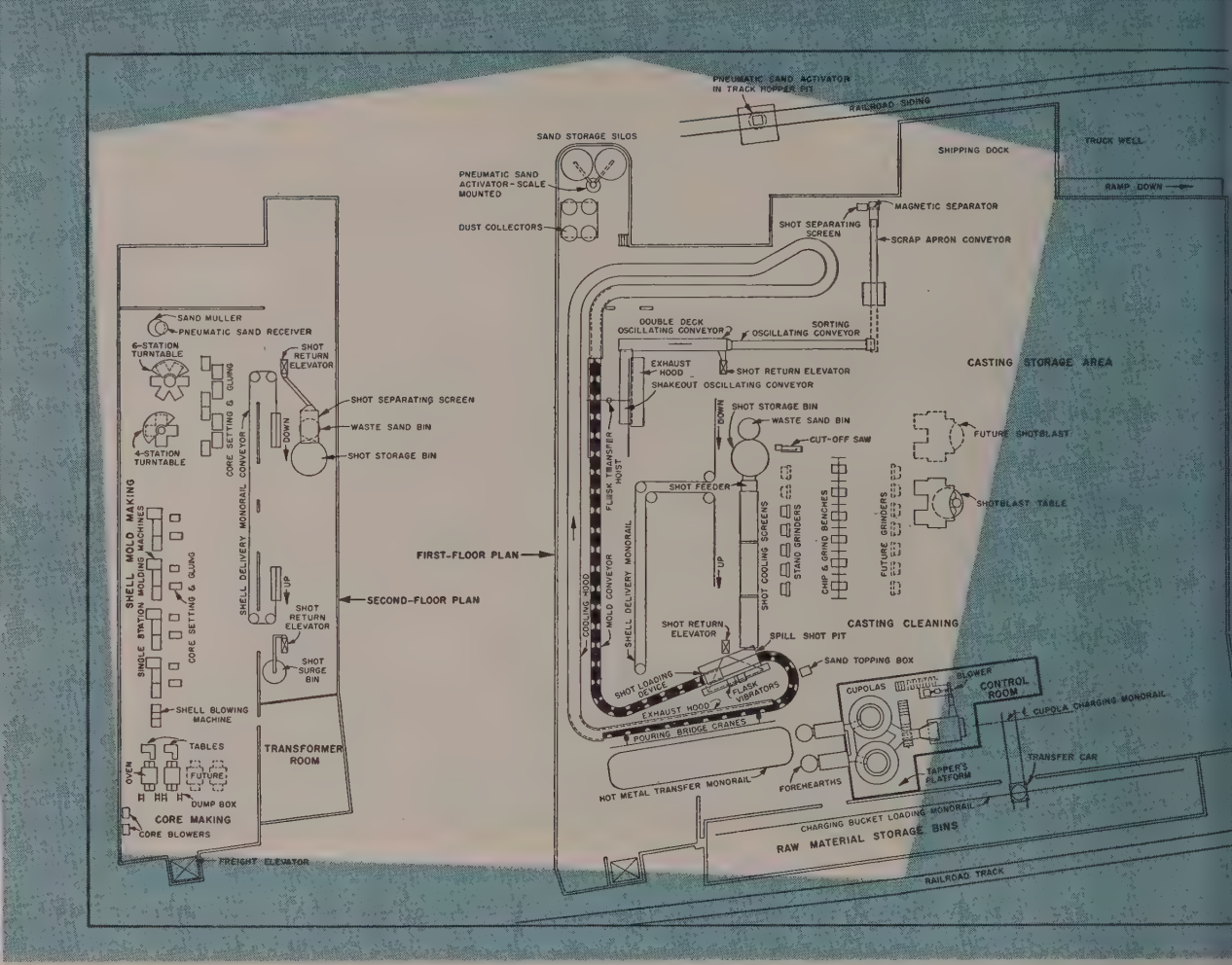
Makers of the rolls with the Striped Red Wabblers

Pittsburgh and Midland, Pa.

cast mill rolls • Johnston cinder pots • rotary tube straighteners • Y-type cold mills
heavy-duty lathes • steel and special alloy castings • end-thrust bearings



Lynchburg Builds Shell Mold Foundry

TEN TONS of shell mold castings can be made in an hour at Lynchburg Foundry Co.'s new foundry in Lynchburg, Va.

The shell mold department (cost: about $1¾-million) has nearly 60,000 sq ft of space for the exclusive production of shell castings of gray and ductile iron. Castings range from ounces to 275 lb.

Mold Making — Shell making equipment is on the second floor. Included are a six-station and a four-station dump box rotary machine. There are four shuttle dump box machines and a shuttle blow machine used for making both cores and molds.

Here's how the six-station machine works: Each station has a pattern heated to 400-410° F by electrical resistance heaters. Patterns can be identical or different, but must fit on 24 x 30-in. pattern plates.

At the first station the pattern is cleaned and sprayed with a silicone emulsion. The pattern indexes to an infrared preheat oven, which helps to bring the pattern surface — particularly the high points—up to temperature. At the next station the pattern is raised to the bottom of a dump box and a rubber valve drops 8 in. of sand-resin mix onto it.

After 15 seconds, the dump box and pattern are rolled 180 degrees to remove excess mixture from the pattern. The sand goes past the valve. When the pattern and dump box are returned to their original position, the valve holds the sand in the upper part of the box. I sand is fed into the box for next pattern.

The shell is cured at the two stations. An oven heats shell with electrical resist heaters. An operator remove at the final station.

Adjustable Cycle — When and drag patterns are mou alternately around the turnt a shell is made in 40 seconds. time is cut to 20 seconds v split patterns which have cope drag patterns on the same are used.

The six-station machine is patterns with deep draws. four-station machine is the s as the six except that the pat cleaning and preheat stations eliminated. The preheat statio

needed because patterns with low draws are used on this ma-e. Pattern cleaning is done at shell removal station. Both hines are fully automatic.

ores—Solid and hollow shell s are made on two standard blowing machines and on two p box units. The blowing ma-es are adapted for blowing coated sand by inserting a ed rubber diaphragm behind blowplate. Heated metal core-s are used. Hollow cores are e by inverting the boxes after blow.

ssembly—Cores, if needed, are ed in the drag and the shell placed in a bonding machine. in is put on the drag and two hooks used in later shot back-operations are set into grooves vided for them at the top edge he mold half. The cope is set he drag, and the bonding ma-e is closed by an air cylinder. ssure is released, and the mold ut on an overhead monorail veyor that moves it down to first floor for pouring.

and—Sand for the shells is of 130 AFS fineness. It comes he foundry in covered hopper and is stored in two 100-ton acity silos.

ischarge devices developed by chburg engineers blend the d as it leaves the silos; this rses the segregation of grain s that occurs during handling. d is taken to the muller by a matic delivery system.

liquid dust suppressant (0.1 cent) is added at the muller. The resin addition is 6 per cent.

After a 15-minute mixing cycle the muller dumps the sand into a 1000-lb capacity cone-bottom bucket. The bucket is taken to a shell machine where it is raised and moved over a stationary hopper where the sand is dumped.

Melting Iron—Two cupolas supply metal. They are acid lined (to 48 in. ID) and operated on alternate days. Air is supplied by an independently fired blast heater that maintains a pressure of 18 to 22 psi. Tapping temperatures are 2900 to 2950° F for gray iron, 2950 to 3000° F for ductile iron.

The high tapping temperatures are needed because of the treatment of the iron before pouring. In the forehearth, sulphur content is reduced by injecting finely divided calcium carbide (carried by a stream of nitrogen gas) through a tube that goes under the surface of the metal. Mechanical slag rabbles remove dry, granular slag from the metal.

Ladles ride on an overhead monorail. A floating section suspended on a scale makes addition of alloys to the bull ladles accurate. Bull ladles distribute metal to the pouring ladles.

Shot and Shells—The monorail conveyor that carries assembled shells from the second to the first floor is unloaded near a car conveyor containing 167 cars. The shells are placed into flasks on the conveyor or in storage racks.

An average of five shell molds are placed in each flask. The hook ends are up and pointing in the same direction. Metal rods placed under the hooks allow the space between the molds to be equalized. A trough is placed over the mold pouring basins to protect them at the next operation.

The conveyor goes to an automatic device for loading number 990 shot into the flasks. Just past the shot loading machine the metal rods and hangers used to hang the molds in the flask are removed by hand. More shot is added manually with a rubber hose and the flasks go to a vibrator that settles the shot.

Just before pouring, the flasks are topped with sand to prevent any spilled metal from ruining the shot. Four men do the pouring.

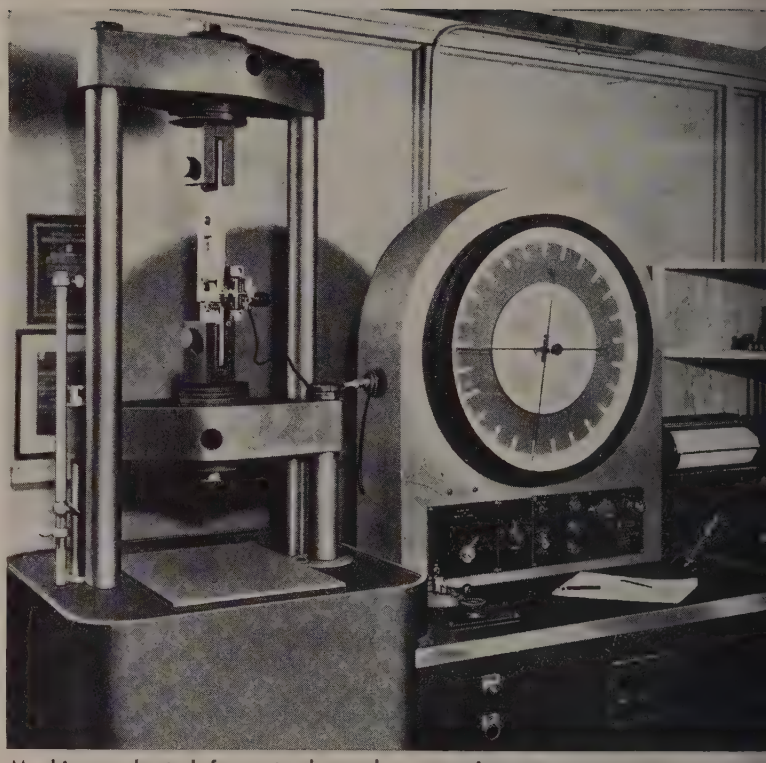
After Pouring — Molds travel through a 340-ft exhaust tunnel. At an average conveyor speed of 5 fpm, the castings cool 68 minutes before shakeout. The mold conveyor has a speed range of 2 to 10 fpm. Its speed is set in inverse relationship to casting weight for constant production tonnage.

After cooling, flasks are lifted to an oscillating conveyor shakeout. A catch holding the bottom of the flask is released and the flask is raised gradually. Shot, shell molds and castings slide slowly onto the conveyor. A hood over the shakeout removes smoke and fumes.

A series of oscillating conveyors separates castings, shot, sand and the broken shell molds. The shot is cooled before it is used again.

station machine can make three shells a minute

Trough protects the pouring basins during shot filling



Machines adapted for extra-long shear specimens . . .

Speed Testing for Aircraft Fasteners

SHEAR TESTS of rivets and riveted joints, recorded rapidly under simulated service conditions set up by the Hi-Shear Rivet Tool Co., Los Angeles, are showing how to meet and exceed the rigid requirements of the aircraft industry for high strength fasteners.

Test specimens required a specially built testing machine with 60 per cent more than standard vertical testing space. A hydraulically operated Baldwin-Lima-Hamilton 60-H universal machine of 60,000-lb capacity, with load pacing equipment and Microformer type stress-strain recorder, was selected.

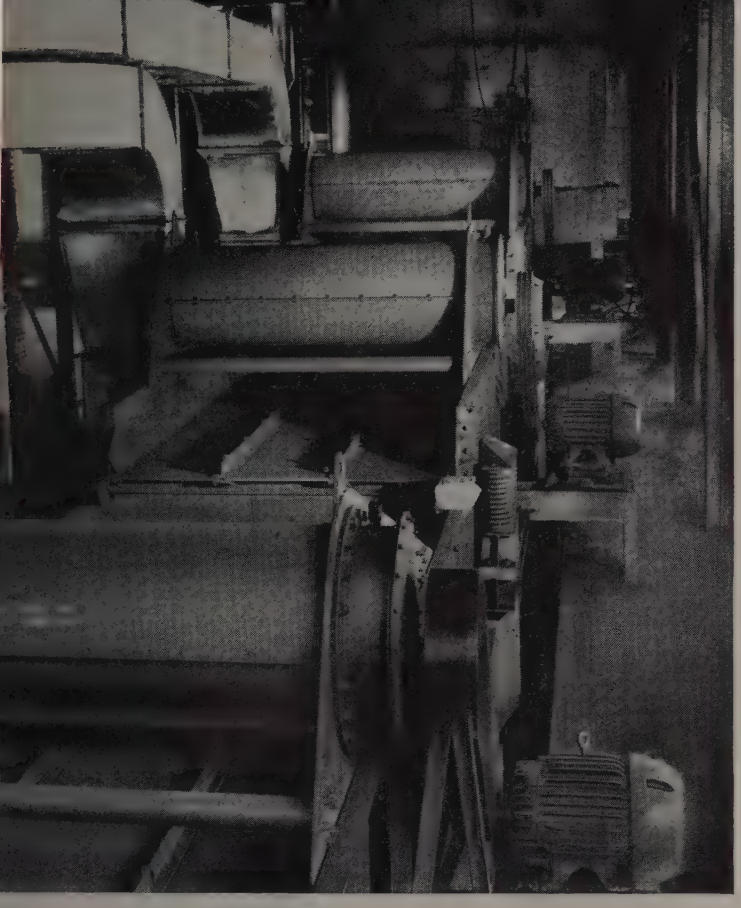
Quick Answers — It provides stress-strain curves which are plotted automatically on a strip chart as increasing shear loads are applied on rivets in long, double-riveted specimens. Curves can be plotted automatically at the rate of one every 3 minutes.

Miniature variable transformers in an extensometer attachment provide the high magnification and accuracy needed in studies of joint performance up to the yield point of various materials. Rates of applying load can be held const The machine also will perf shear tests under compres loading.

Fatigue Tests—Similar simp ity of testing has been prov for fatigue tests of bolts i Baldwin - Lima - Hamilton—S tag fatigue machine of 10,00 capacity. Fatigue tests are m to compare materials in fast shapes and to guard aga points of stress concentration flaws in material caused by p essing.

Present practice is to a fatigue loads that are a comp tively high fraction of the y point. The Sonntag machine m tains a constant load at cycles per minute. Results compared with those obtained bolts long standard for airc use.

One feature of these tests is use of two specially designed h ing fixtures which fall apart w a bolt fails so that it is not d aged further. It includes two cial steel cups and a retaining The bolt is installed only fi tight for testing in the mach



IOW LYNCHBURG FOUNDRY USED PROFESSIONAL NGINEERING TO SOLVE HIGH-VOLUME PRODUCTION ROBLEMS AT INDUSTRY'S NEWEST, MOST MODERN HELL MOLDING PLANT

IEW FACILITIES ENGINEERED BY GIFFELS & VALLET PRODUCE 00 TONS OF FINISHED CASTINGS IN 24 HOURS!

he Lynchburg Foundry Company's new shell molding plant was built to produce rge quantities of close tolerance, fine finish castings. Although shell molding is ghly adaptable to mechanized operations and offers many other advantages, the anning and engineering for an installation of this size posed many new problems.

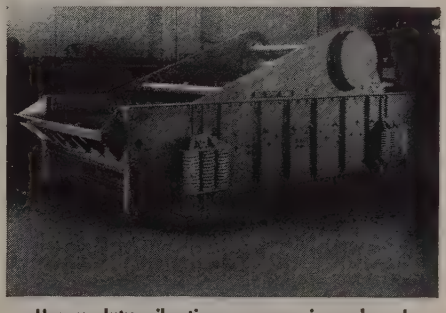
and is discharged from hopper ottom railroad cars, aerated, nd delivered to storage silos neumatically.

As the project progressed, the extensive facilities of both organizations were coordinated on all phases of design, engineering, equipment specification and construction. In many instances, G & V's background of experience in other industries proved of great value. Two specific examples of this were the methods used to handle the extremely fine molding sand, and the large quantities of iron shot used for shell backup.

The major sand handling problems were to control dust, prevent segregation, and introduce complete mechanization. 100 tons of dry sand with an average AFS fineness of 120 are used per 24-hour day. The sand is removed from box cars into storage silos, batched, and transported to the mullers by a completely enclosed pneumatic handling system. A specially designed cone, orifice and air slide at the base of each storage silo reverses the segregating effect of the sand entering the silo. Batches for the mullers are accurately measured by a unique electronic weighing instrument. This new sand handling system keeps dust and segregation at a minimum, and is similar to the modern mechanized methods employed in the bulk handling of cement, flour, and other dry materials.

Completed plant, looking toward the cupolas.

About 125 tons per hour of shot must be separated from the castings, then cooled and cleansed of sand. This is accomplished by a series of vibrating screens constructed of heavy-duty stainless steel cloth. Air exhausted through the screen at the rate of 150 CFM per square ft. cools the shot from above 300° to below 150°. The screen is designed so that air pull is equal at every point on its surface. Rate of travel and depth of the shot bed can be readily adjusted to meet varying requirements. All transfer points in the system are provided with a "stone box" so that the highly abrasive shot falls upon other shot, rather than abrading the chutes themselves. This method was adapted from similar applications in the cement and rock products industry.



Heavy duty vibrating screens air cool and clean the shot without the use of water.

These are but several examples of the many ways in which Giffels & Vallet's comprehensive planning-engineering services have pointed the way to greater output, lower costs and improved casting quality for the foundry industry. These services are discussed in a special Foundry Brochure. A copy will be mailed on request.

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DETROIT, MICHIGAN

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ENGINEERS SERVING INDUSTRY FOR OVER 30 YEARS

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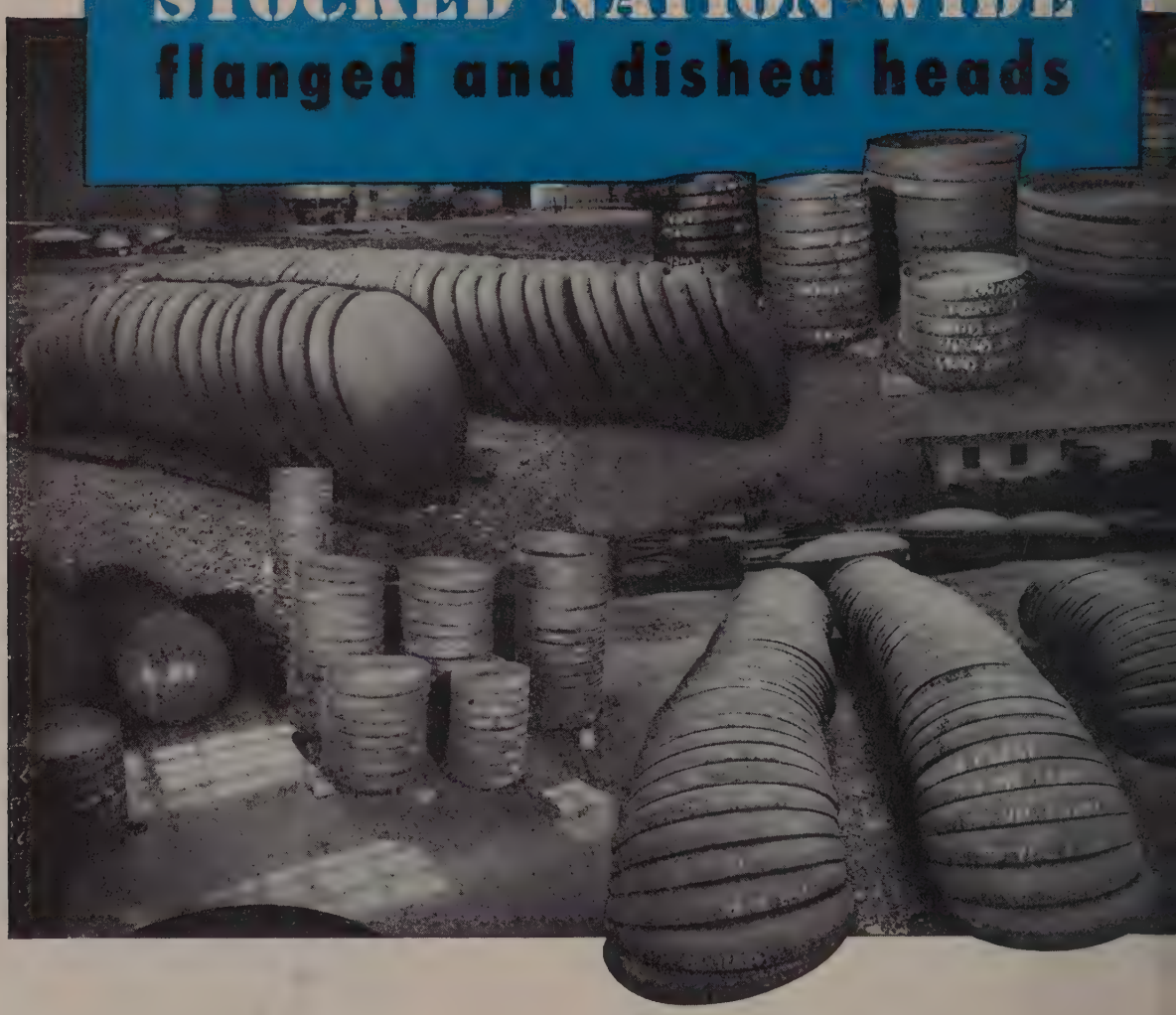
flanged and dished heads



Stocked at CF&I warehouses throughout the country, Claymont Flanged and Dished Heads are always conveniently and promptly available —in standard and ASME types.

Claymont Flanged and Dished Heads are stocked in sizes from 18 inches to 8 feet in overall diameter, and in gauges from 3/16 inch to 5/8 inch. Supplied from carbon steel.

We are also prepared to handle head-forming operations on both ferrous and non-ferrous metal supplied by the customer. To order, contact our nearest sales office or write direct to Wickwire Spencer Steel Division, The Colorado Fuel and Iron Corporation, P. O. Box 1951, Wilmington, Delaware.

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Carbon and Alloy Steel Plates • Manhole Fittings and Covers • Stainless-Clad Plates • Large Diameter Welded Steel Pipe • Flame Cut Steel Plate Shapes • CF&I Lectro-Clad Nickel Plate

amma Ray Projector Takes a 360-Degree Picture

his projector is a time saver. On one job it took pictures in 2 hours and 45 minutes.

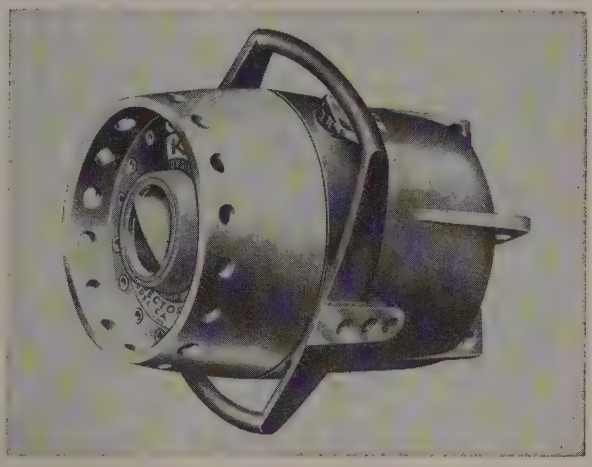
o take radiographs of welds in tanks, segments onventional x-ray film are placed on the outside he tank in a special continuous belt. The pro-or is placed inside.

he portable projector is safe, needs no elec-ty or control board. Maintenance is confined to enishment of the radioisotope.

ead shields the projector; wall thickness depends he strength of the isotope used. A lensless shut-can be opened and closed remotely.

he projector is charged in a radioisotope labora-. There are three models, 75, 250 and 2900 lb.

te: Metal & Thermit Corp., 100 E. 42nd St., New k, N. Y. *Phone*: Oxford 7-0800



emiautomatic Grinder Handles Billets

his new billet grinder promises big production eases over previous methods.

will handle 8-ft long billets from 2½ up to 6 square. Other grinders are being designed for s and for larger billets.

uch of the production increase is due to speedy dling. After billets are placed on skids by crane rators, they are machine handled. Handling is trolled by an operator seated in the pulpit, fully tected by safety glass.

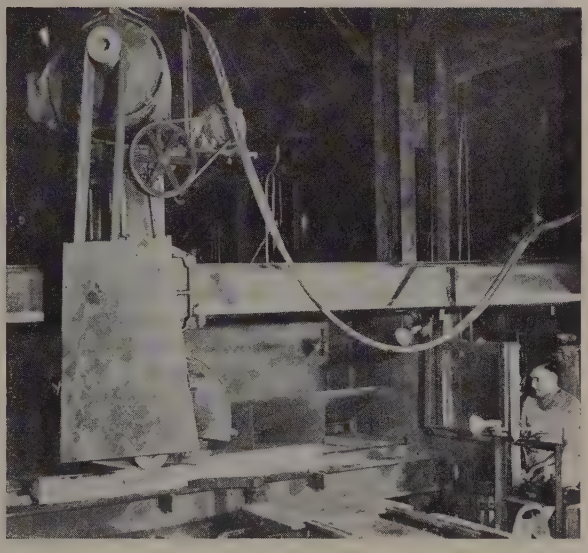
illets are fed mechanically to a manipulator table re the operator automatically clamps the billet, bles it from side to side or edge to edge and harges it.

continuous and uniform downward pressure is ted by the grinder. The amount of downward ssure is adjustable.

his downward pressure, in addition to producing formly good work, insures that the operator will d the billet down to the bright metal where it is sible to detect flaws. The amount of stock to be oved can be varied to suit the user's needs.

he grinding wheel is set at an angle of about 30 rees to the work. This gives a wider surface of tact per pass and enables the wheel to climb k up on the work after it passes off the end of billet. The wheel has a diameter of 20-in. and in. face.

o insure constant contact of the wheel with the k, even when there are substantial surface ir-larities in the billet, the grinding wheel is set n. below the billet surface. As the grinding wheel



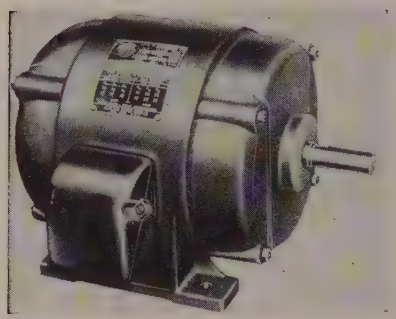
floats over the billet, hydraulic snubbers control vertical movement.

The first standard production model is the No. 1 billet grinder. It is powered by a 40-hp motor. Travel is obtained by a gear reduction unit and integral fluid coupling powered by a 1½-hp, a-c motor.

While travel on the No. 1 grinder is standardized for 8-ft billets, other models can be built to customer specifications. *Write*: Lewis Machinery Division, Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh, Pa. *Phone*: Atlantic 1-5700

Industrial Motors

Here is a new line built to the new rerated NEMA standards. Greater horsepower ratings come in a smaller package; efficiency is increased with a reduction in weight. Double-end ventilation is given by dual-cast aluminum fans. The new line goes up to 30 hp.



Lima continues to make its regular line of NEMA motors (½ to 150 hp). *Write*: Lima Electric Motor Co., 136 Findlay Rd., Lima, O. *Phone*: 29610

Automation Press Hand

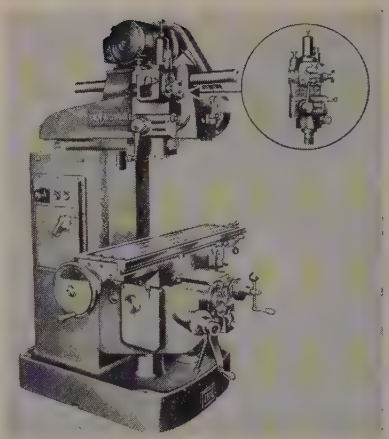
This new press hand pulls parts from a die press at a rate of up to 30 strokes a minute. Adaptable to job shops, it can be moved from one press to another.

Special clearances to facilitate handling are not needed. There are three sizes, with strokes of 24, 36 and 49 in. *Write*: Hamilton Automation Inc., 1490 Edison Ave., Hamilton, O. *Phone*: 2-4581

Milling Machine

This tool has an adjustable cutter head that permits horizontal, angular and vertical milling, plus boring and drilling on one machine.

The cutter head has a 4-in. quill travel and eight spindle speeds—



from 110 to 3600 rpm. The cutter head has a 2-hp motor.

Table size is 10 x 40½-in. Travel is 22 in.; crossfeed is 10 in. *Write*: Van Norman Co., 3600 Main St., Springfield, Mass. *Phone*: Republic 7-4721

Gear Checker

Spur or helical gears are checked for three variables in tooth dimensions. Electronic indicators and a master gear inspect for incomplete

stroke, oversize or undersize teeth and thick or thin ones. Gears not O.K. go to chutes that sort them by defect. *Write*: National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich. *Phone*: Walnut 1-8980

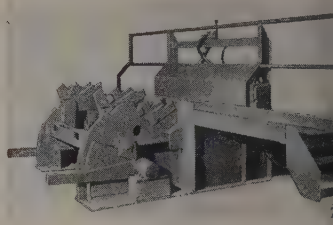
Primer Removal

Here is a two-phase solvent for removing zinc chromate primers from aluminum. It has a flash point of 290°F and works faster when heated to 140 to 180°F. A pressure water rinse is recommended to float off the loosened paint. *Write*: Oakite Products Inc., 134E Rector St., New York 6, N. Y. *Phone*: Whitehall 3-0940

Bloom Turner

This machine makes the tu of billets for inspection or s ing quick, easy and safe. ered by a 15-hp motor, the t is made of heavy steel plate structural shapes.

It will handle regular lengths of square or rectan sections where the greater di sion does not exceed the less more than a few inches. Ca ties: Three 4-in. square piece three rectangular pieces 4 i their longest side; two rectan pieces 6 to 7½-in. on their lo



side; or one square piece 8 in., or one rectangular piece 12 in. on its longest side. *W* Evans Enterprises, Massillon *Phone*: Temple 2-7074

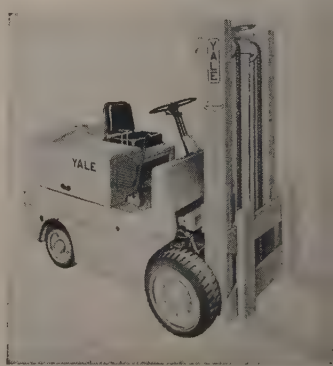
Strapping

A banding strap with a cu edge is ideal for paper rolls similar products. It is availab ⅜-in. widths in 0.020 gage *Write*: Allegheny Steel Band Box 716, Pittsburgh 30, Pa. *Ph* Walnut 1-7100

Lift Trucks

A new series of industrial trucks features fully auto gear shifts. Faster, smoother terials handling is combined greater operator comfort safety.

All trucks—gasoline, diesel



battery of 9" and 21" x 44" Lewis four-high Foil Mills

. . . high production mills roll foil at speeds up to 4000 fpm

Whether you want to start with an ingot from a hot mill or start with coils, you can get a full range of Lewis equipment, designed and built to meet your specific requirements. Over one hundred modern Lewis Foil Mills, for example, are now successfully operating in plants of the country's top ranking aluminum foil producers.

Built in various sizes and widths to meet individual customer requirements, these Lewis Foil Mills include the latest design in bearings, electric tension control, thermal control and handling equipment. They usually start with .030" or .026" sheet and can reduce down to .00025" . . . at speeds ranging from 1000 to 4000 feet per minute.

So call us in the next time you're in the market for a mill to roll aluminum. Our engineers, who have had extensive experience in the development of high speed mills, will study your requirements with you. This experience plus modern manufacturing facilities will assure you of getting the type of equipment best suited to your specific needs.

LEWIS four-high FOIL MILL

BLAW-KNOX COMPANY • LEWIS MACHINERY DIVISION
PITTSBURGH 30, PA.

LEWIS PRODUCTS: Two-High Mills • Three-High Mills • Four-High Mills • Strip Mills • Bar, Billet and Structural Mills • Plate Mills • Rod Mills • Coilers • Tables • Shears • Pinion Stands • Gear Drives • Roll Lathes

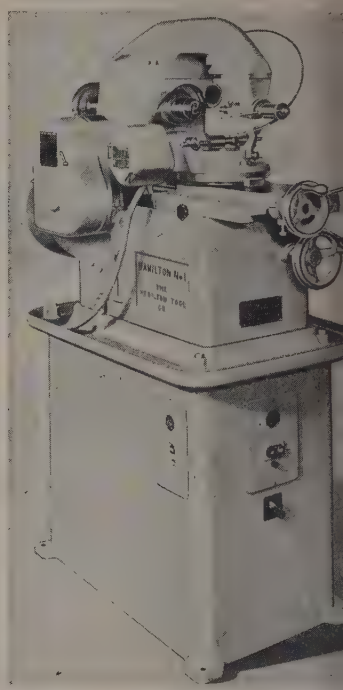
BLAW-KNOX

LP-gas powered—are avail with torque converter trans sions.

The trucks have inching cont *Write*: Yale Materials Hand Division, Yale & Towne Mfg. 11000 Roosevelt Blvd., Phila phia 15, Pa. *Phone*: Orc 3-1200

Hobbing Machine

Independent selection of spe feeds and indexing is offered this small gear, precision hob It adapts to existing tooling



gardless of the style or mak machine for which it was m *Write*: Hamilton Tool Co., H ilton 4, O. *Phone*: 4-8358

Straightener and Polis

This machine polishes as straightens bars and tubes at production speeds. It is avail in several size ranges.

A typical model handles drawn steel bars from ⅛ to in. in diameter at speeds up to fpm. Other materials: High low carbon steels, bessemer gr and alloys.

Power: An adjustable-speed rect-current motor—30/40 hp, 1600 rpm, 230 volts. All cont

modern design specifies stainless steel

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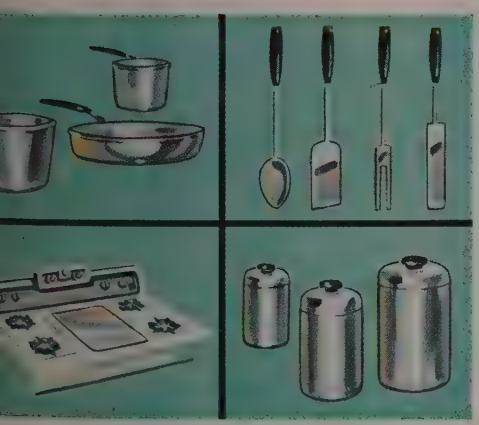
STAINLESS
Steel
for the home



The lady agrees with the architect that her modern, cheerful, Stainless Steel kitchen will be the most beautiful room in the new house. Stainless Steel is the bright, long lasting metal that will not tarnish, is easy to clean and a joy to live with.

For the product you make today and the product you plan for tomorrow specify McLouth high quality sheet and strip Stainless Steel.

McLouth Steel Corporation

Detroit, Michigan

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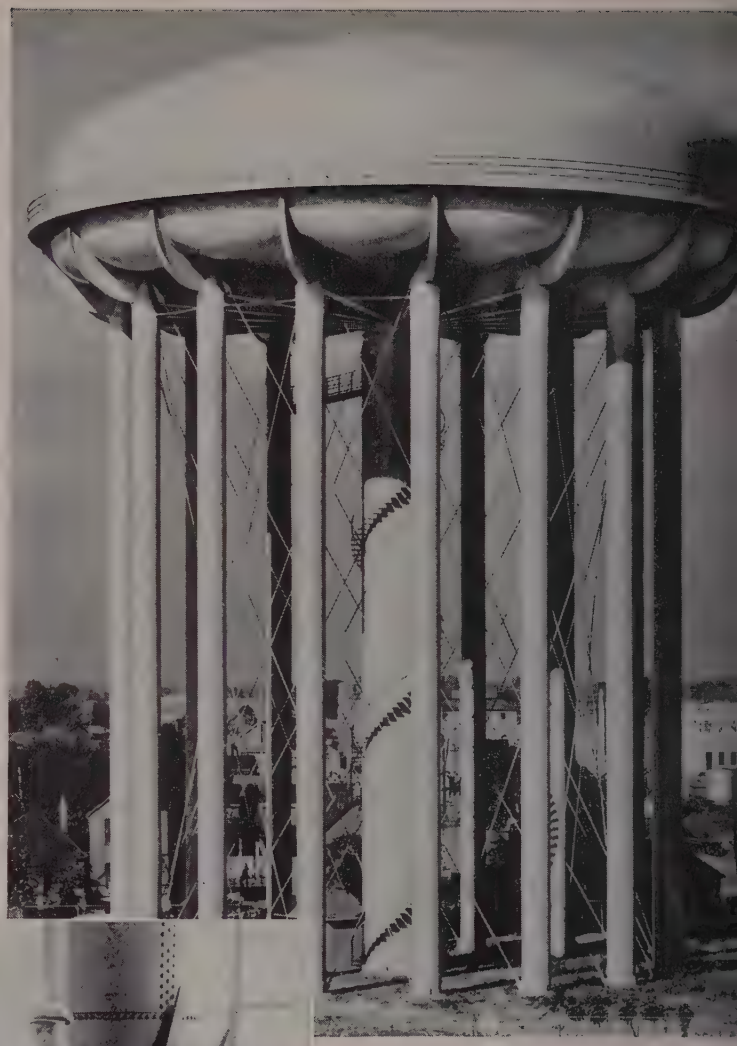
MONUMENT

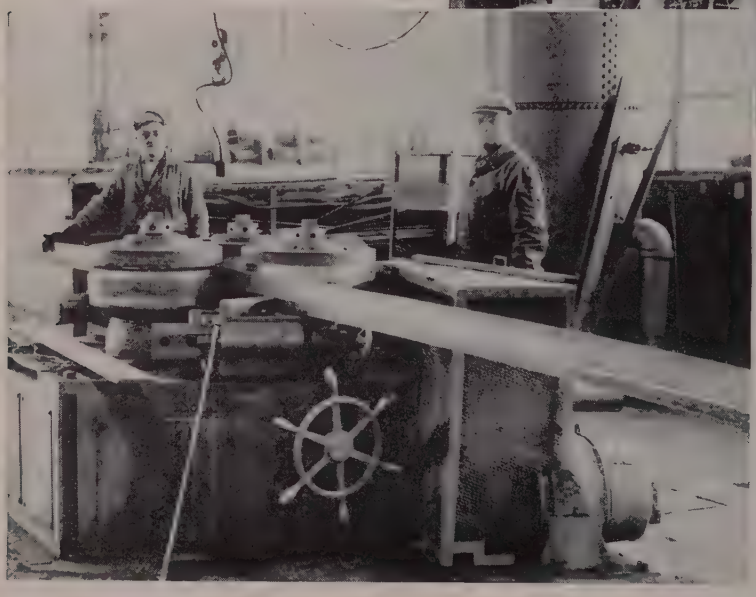
TO PRECISION METAL FABRICATION

This 104-ft. diameter radial cone bottom elevated tank is indeed a monument to the engineering and fabricating ability of Horton Steel Works, Ltd., Fort Erie, Ontario. The huge structural members, including a framework of angle-iron rings for the tank roof, were precut and formed in the Horton shops to fractional-inch tolerances for on-site assembly.

The rings, which are welded to the underside of the roof plate, were accurately and rapidly shaped to the curve of the roof by "Buffalo" Bending Rolls like the one shown below. Horton uses one of these machines in its Fort Erie plant to form the curved angles used in Horton tanks.

If you bend structurals, do it the accurate, high-speed way used by industrial leaders — with "Buffalo" Bending Rolls.





"Buffalo" BENDIN ROLLS

— like this No. 3 Horizontal Roll at Horton plant, turn out commercially pe circles, spirals, arcs and other shapes most structurals, at production-line speed full range of "Buffalo" Horizontal and V cal Bending Rolls is available for your h structural forming — while "Buffalo" Pi Type and OA Aircraft Type Rolls are r to cut your costs on bending light mem Write today for Bulletins 3344-A and 3

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158 MORTIMER ST. BUFFALO, NEW YORK

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readily accessible; change over
n one size to another is quick.
te: Sutton Engineering Co.,
t National Bank Bldg., Pitts-
gh 22, Pa. *Phone*: Grant
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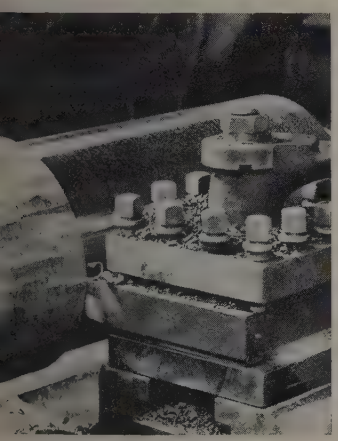
rbide Tools

wo new steel-cutting carbide
les, CA-606 and CA-609, offer
ter edge wear without loss of
k resistance.
rade 609 is for machining cuts
⅛-in. and where more re-
nce to wear is needed.



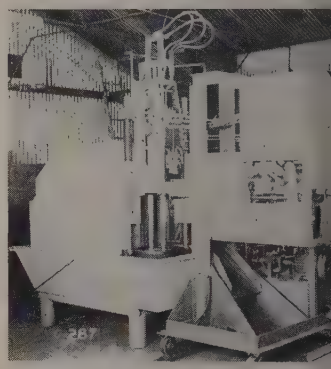
A-606 has high resistance to
e wear, as well as greater re-
ance to heat. It is especially
ful where machining tolerances
t be held. *Write*: Carmet Divi-
, Allegheny Ludlum Steel
p., Pittsburgh 22, Pa. *Phone*:
nt 1-1085

g Caster

luminum slugs for forging or
act extrusion are made auto-
ically from ingot metal by this
er. Slugs are produced directly
n a melting furnace.
he machine has a pan and a

NEW PRODUCTS and equipment

water-cooled mold, both of w
enter the well of the furnace.
minum enters the mold throu
gate in the pan and is ej
after solidification. Chang

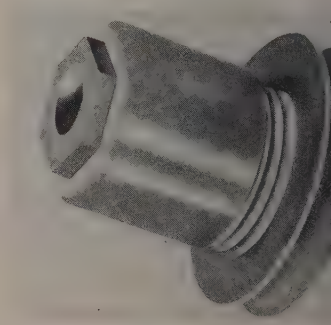


molds to make different
slugs takes only a few h
Write: Stroman Furnace & I
neering Co., Franklin Park,
Phone: Gladstone 5-2412

Variable-Speed Pulley

Speed ratios up to 2:1 ar
livered by this ¼-hp pulley.
suited for limited space ap
tions.

Smooth belt surfaces re
wear and add to quietness o
eration. An A-section belt is

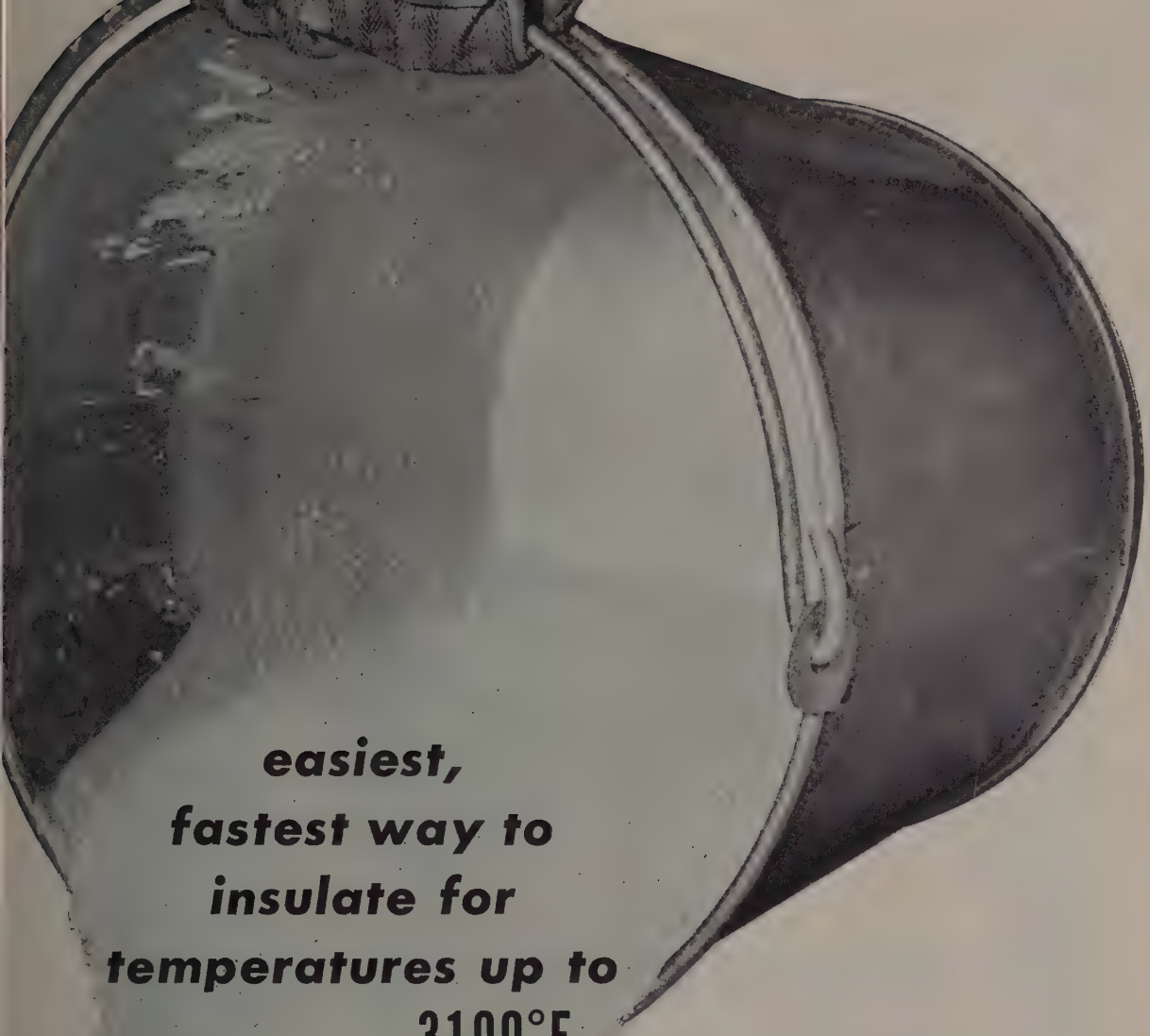


Bronze, oil-impregnated
ings eliminate the need for l
cation. The pulley is 3 5/16-in.
and 3 in. in diameter. *Write*: I
joy Flexible Coupling Co., 487
Lake St., Chicago 44, Ill. *Ph*
Esterbrook 9-3010

Cutoff Wheels

A faster, cooler cut is give
a new line of aluminum oxide
inoid cutoff wheels. Sharp
prevent binding in the cut.

Three grades are available



easiest, fastest way to insulate for temperatures up to 3100°F

Here's why ALFRAX cement insulates so well: A sliced-through section of set cement reveals the secret: dead air space in the thousands of closely-packed bubbles of alumina.

ALFRAX® castable aluminum oxide cements are just about the most effective insulating materials you can find for temperatures up to 3100°F—and especially so at the upper end of the temperature range. They consist of tiny bubbles of pure alumina held together by a bonding agent.

These castables make ideal back-up linings for nonferrous crucible furnaces and for the sidewalls of reverberatory furnaces. Or you can cast them into burner blocks for core ovens and malleable annealing furnaces. Aluminum oxide is one of the most stable and inert of all materials . . . is highly resistant to practically all furnace conditions. And to use, all you do is mix it with water and pour.

So, if you're looking for a castable insulating material to stand really high operating temperatures . . . and keep on standing them through a long, useful life . . . you can end your search right now by writing us for free engineering information on these highly refractory, low heat capacity, easy-to-use cements. Address Refractories Division, The Carborundum Company, Perth Amboy, N. J., Department W105.

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dry metal cutting: "R" for minimum burn and burr; "T" for general-purpose work; and "V" for rough work where maximum wheel life is the most important factor.

Wheel sizes range from 6 to 20 in. in diameter and are 1/16, 3/32 and 1/8-in. thick. All wheels are available in 24 to 120 grit. *Write*: Bonded Abrasives Division, Carborundum Co., Niagara Falls, N. Y. *Phone*: 6631

Fork Trucks

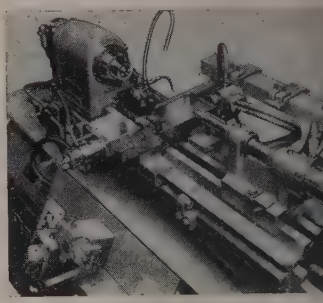
High maneuverability, ease of maintenance and increased operator comfort and convenience are features of a new line of electric fork trucks. Capacities are 3000, 4000 and 6000 lb.

A low center of gravity, increased width and low overhang give high stability. The trucks have no cowl; the operator has a clear view of the load and the floor immediately ahead. The floor plate is free of obstruction. *Write*:

Baker-Raulang Co., 1250 W. St., Cleveland, O. *Phone*: Oly 1-3000

Tracer Lathe

This machine has an swing, is 17 in. between c and has a carriage travel of The duplicator crossfeed is 1



An air-operated collet close tailstock work from a single tor valve. *Write*: Elgin Tool W 1770 Berteau Ave., Chicago 1 *Phone*: Bittersweet 8-6100

Die Handler

This new model handles 36 in. dies or molds which wei to 6000 lb. The top platen is

The "Unseen Hand" at the Controls . . .

AUTOMATICALLY SENSITIVE

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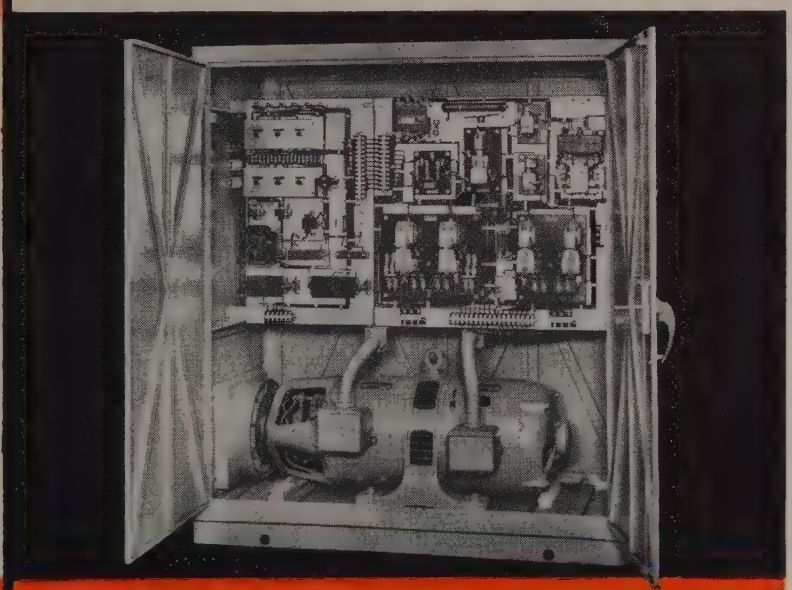
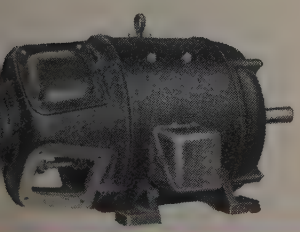
Century SELECTIVE SPEED DRIVE

More accurately than the most experienced operator, Performance-Rated Century Selective Speed Drives *automatically* adjust motor speed to meet operating requirements. Speed changes are integrated with varying pressure, temperature, viscosity or size of the material being worked. You can also use Century Selective Speed Drives for starts, stops and jogs—forward or reverse—as required.



For full information and assistance on any motor drive application, AC or DC, call your nearest Century Sales Office . . . or write us direct.



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1/8 to 400 H. P.

CENTURY ELECTRIC COMPANY

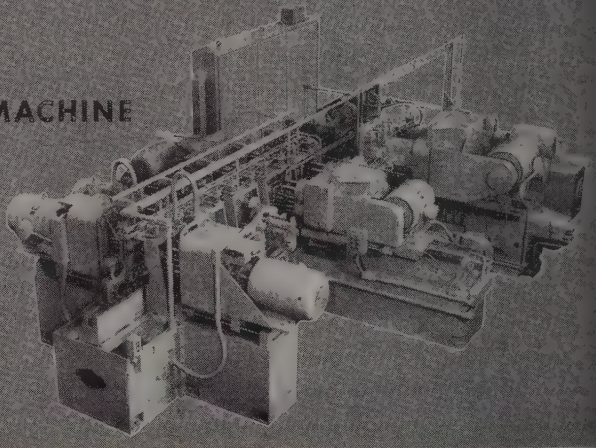
1806 Pine St., St. Louis 3, Mo. • *Offices and Stock Points in Principal Cities*

10 Station Automatic In-Line TRANSFER MACHINE

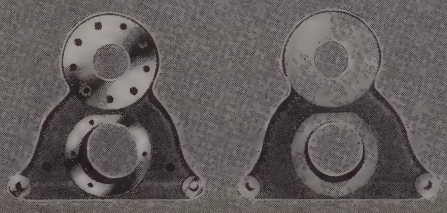
BAKER

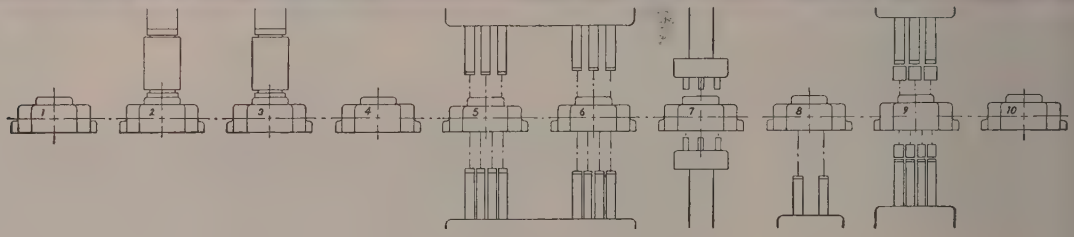
Performs Multiple Operations on Tractor Housings

THE MACHINE



THE PART





THE OPERATIONS

STATION NO. 1
LOAD 1 PART

STATION NO. 2
UNIT NO. 1
COMB. SEMI. FIN. BORE 5.165 & 3.249 & 2.861 DIAS.
COMB. SEMI. FIN. BORE 4.425 THRU BOTH WALLS

STATION NO. 3
UNIT NO. 1
COMB. FIN. BORE 5.180 & 3.264 & 2.876 DIAS.
COMB. FIN. BORE 4.440 THRU BOTH WALLS

STATION NO. 4
IDLE

STATION NO. 5
UNIT NO. 2 "U" DRILL 5 HOLES
31/64 DRILL 6 HOLES

UNIT NO. 3 31/64 DRILL 8 HOLES
21/32 DRILL 1 HOLE
"U" DRILL 6 HOLES
23/32 DRILL 1 HOLE

STATION NO. 6
UNIT NO. 2 ½ CHAMFER 5 HOLES
⅝ CHAMFER 6 HOLES

UNIT NO. 3 ⅝ CHAMFER 7 HOLES
13/16 CHAMFER 1 HOLE
½ CHAMFER 6 HOLES
23/32 DRILL 1 HOLE
COMB. COUNTERBORE
.796 & CHAMFER 1 HOLE

STATION NO. 7
INSPECTION

STATION NO. 8
UNIT NO. 4
.6910 REAM 1 HOLE
.8157 COUNTERBORE 1 HOLE

STATION NO. 9
UNIT NO. 5 7/16-14 N.C. TAP 5 HOLE
9/16-12 N.C. TAP 6 HOLE

UNIT NO. 6 7/16-14 N.C. TAP 6 HOLE
9/16-12 N.C. TAP 7 HOLE
½-14 N.P.T. TAP 2 HOLE

STATION NO. 10
UNLOAD 1 PART

Whatever Your Specific Job Problem, Consult Baker Engineers. Write

BAKER BROTHERS, INC., TOLEDO, OH

DRILLING • TAPPING • KEYSEATING • CONTOUR GRINDING MACHINES

PRODUCTS and equipment

lowered with heavy precision screws driven by a 2-hp electric motor. Fine adjustments in ion can be made with an auxiliary hand crank.

e platen can be rotated by a electric motor or by a hand . *Write*: Hansford Mfg. Co., University Ave., Rochester 7, . *Phone*: Greenfield 3660

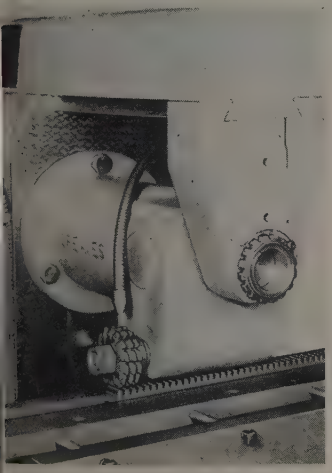
d Spray

ngthy torching and tunnel drying of foundry molds are nated by a new mold spray, oat. By mixing it with isoyl alcohol and igniting, molds be closed after a short burntime. Fuel, maintenance and g equipment expenses are nated.

e coating can be sprayed, ned or swabbed. It produces th castings. *Write*: Frederic tevens Inc., 1800 18th St., De- 16, Mich. *Phone*: Tashmo 5

k Milling

is head for the Greaves horizal milling machine makes pos- many types of crossmilling, ding racks on long work- s.



e unit mounts on the column of the machine. It operates at pindle speeds of the machine. e: Greaves Machine Tool Di- n, J. A. Fay & Egan Co., 2011 rn Ave., Cincinnati, O. *Phone*: 1-0730

NEW Literature

Write directly to the company for a copy

Publication File

Here is a list of publications on instruments and controls for industrial and power plants, heat treating furnaces and instruments for research, teaching and testing—booklet ENT (1), 24 pages. Leeds & Northrup Co, 4901 Stenton Ave., Philadelphia 44, Pa.

Threading Machines

Data for automatic nipple threading machines are given—bulletin D-85-1, 10 pages. Landis Machine Co., Waynesboro, Pa.

Heating Elements

Charts, tables and drawings explain electric heating elements of tubular, strip, water and oil-immersion types—publication EC-53, 24 pages. Cutler-Hammer Inc., 320 N. 12th St., Milwaukee, Wis.

Machining and Inspection

Gaging machines for inprocess and final inspection are described—circular 592, 12 pages. Features of comparators are illustrated — circular 586, 24 pages. Features and tooling of two turret lathes are described—bulletin 158, 12 pages and bulletin 159, 12 pages. Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford 1, Conn.

Gear Making

Described are representative models of gear shaving machines, gear inspection equipment, gear lapping machines, gear grinding machines, broaches and broaching fixtures—bulletin AP55-8, 16 pages. National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich.

Three-Dimensional Cams

The development of cams from theory to finished product is presented—4 pages. Cam Division, Parker Stamp Works Inc., Franklin Ave., Hartford, Conn.

Color Anodizing

Presented are recent developments in color anodizing aluminum—Technical Adviser 31, 4 pages. Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.

Milling Machines

Design highlights of dial-type units are presented—publication M-1915, 16 pages. Cincinnati Milling Machine Co., Cincinnati 9, O.

Pneumatic Silencers

Metal units that eliminate noise shock from air-operated equipment are covered—4 pages. C. W. Morris Co., 10628 Cloverdale, Detroit 4, Mich.

Sling Chains

Here is a reference book for the buyer and user of sling chains—data book 100, 32 pages. Columbus McKinnon Chain Corp., Tonawanda, N. Y.

Presses

Double crank presses in open back and upright models are featured—bulletin 65C, 26 pages. Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11, N. Y.

Fire-Resistant Fluid

Pydraul F-9, a fluid for hydraulic equipment operating near possible sources of ignition, is described—19 pages. Organic Chemicals Division, Monsanto Chemical Co., St. Louis 1, Mo.

Super Refractories

Properties and uses of sillimanite-type and bonded mullite high-temperature refractories are covered—bulletin 318, 7 pages. Chas. Taylor Sons Co., subsidiary of National Lead Co., Cincinnati, O.

Instruments

Schematic drawings show how instrumentation is applied in the automatic control of metal processing—bulletin 98261, 12 pages. Taylor Instrument Cos., 95 Ames St., Rochester 1, N. Y.

NEW BOOKS

Forming of Austenitic Chromium-Nickel Stainless Steels, International Nickel Co. Inc., Direct Mail Circulation Section, 67 Wall St., New York 5, N. Y., 394 pages, $5.

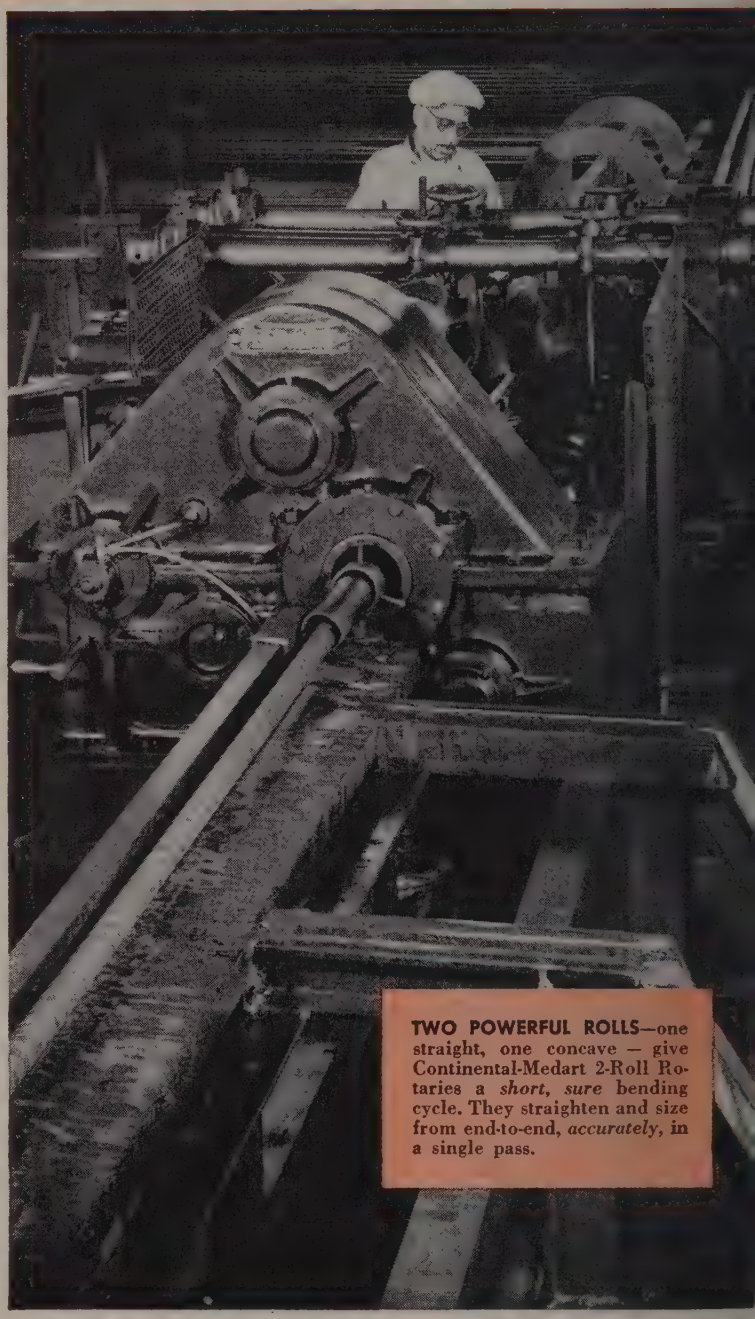
This revised and expanded edition gives the minute details on how to form the chromium-nickel stainless steels. Described are new and old processes, including those using only one die. The effect of composition, temper and finish on forming characteristics is explained.

HOW Crucible Steel Company KEEPS BAR STRAIGHTENING COSTS DOWN

THESE rugged Continental-Medart 2-Roll Rotary Straighteners straighten accurately *from end to end*... simultaneously polish the bars and improve out-of-roundness . . . all in *just one pass.* As a result, Crucible Steel Company, Pittsburgh, Pennsylvania, is able to keep down the cost of straightening quality hot-rolled bars. They have virtually eliminated expensive rehandling and reprocessing. And they get complete automatic operation—bars are fed to and delivered from the machine mechanically. Only one operator is required for each machine.

If you want to save money, follow Crucible's example. Use Continental-Medart Straighteners. Use the 2-roll, single motor machine for straightening and sizing hot-rolled bars, or for sizing or polishing centerless turned bars. Use a Continental-Medart 2 x 2 Universal (two rolls, each driven by a separate motor) to straighten cold-drawn or centerless ground bars at high speed. Use a Continental-Medart Multicycle Straightener (with six rolls and *two cycles* of straightening) to straighten round pipe or tubing at very high speed.

Whatever your straightening requirements, call on Continental-Medart for rugged, dependable equipment and for expert engineering assistance. Continental-Medart manufactures a complete line of cold finishing equipment for processing everything from rough billets to fine wire.



TWO POWERFUL ROLLS—one straight, one concave — give Continental-Medart 2-Roll Rotaries a *short, sure* bending cycle. They straighten and size from end-to-end, *accurately,* in a single pass.

CONTINENTAL Foundry & Machine Company

CONTINENTAL-MEDART

Engineering and Sales Offices: 200 Grant St., Pittsburgh 19, Pa.
General Offices: 4407 Railroad Ave., East Chicago, Ind.
Plants at East Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.
Copes-Vulcan Division, Erie, Pa.

Market Outlook

ONSUMER pressure on the steel mills for po-tion in first quarter rolling schedules is mount-g. It begins to look like most buyers are going be disappointed in the tonnage they will be le to place on mill books for delivery in the riod. From all indications, mill acceptances ll fall considerably short of consumers' needs.

Although steelmakers are accepting orders practically all the major products for ship-ent after the turn of the year, the tonnage ailable for new commitments is limited by in-cated heavy carry-overs at year end. From month to six weeks of production may have be blanked out to care for overflow business.

GHT SUPPLY—The squeeze is expected to ghten as the fourth quarter advances. Ex-pt for limited openings in mill schedules, this arter's production is about sold out. The ringency is noticeably severe in hot and cold-lled sheets, hot-rolled bars, structurals and ates. No early relief is in sight.

An encouraging note is provided by heavier ipments of delinquent tonnage (some original-scheduled for July-August). Major suppliers e pushing steel into fabricating plants at a te that enables manufacturers to maintain op-ations with less drag on their inventories. This obably explains the relative absence of distress anufacturing cutbacks.

IVENTORIES—The belief prevails in market rcles that consumers' inventories have risen ghtly since summer. The slowing down in tomobiles for model change-overs undoubtedly sulted in some improvement of stocks in that ea. But, in general, manufacturers' stocks fall far below what is considered a safe margin.

In present circumstances the chances appear slim for buyers to improve their inventory position materially in the months immediately ahead. The absence of substantial stocks at year end could provide strong markets.

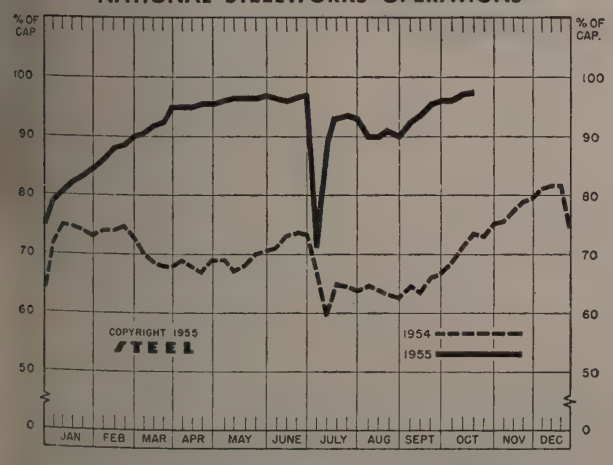
PROMISING OUTLOOK—Recent nervousness in the stock market, which resulted in a drop of over 45 points in the industrial stock average in about two weeks, has not been communicated to the manufacturing industry. Demand for steel is strong and promises to continue well into next year. Some slackening in activity may come as 1956 advances, but no one anticipates anything like a severe slump.

Building steel is expected to be active for months. A heavy volume of work is in prospect, including a number of large projects now in planning. One will require 180,000 tons of structurals; two will take 30,000 tons each. Of course, railroad steel needs will be heavier.

PRICES STRONG—Except for an increase in list prices on large and small bolts, market prices are unchanged. The revision in bolts is significant since it is the first change in years. Some premium-priced plates are moving from the East into Pittsburgh. STEEL's arithmetical price composite on finished steel is steady at $128.14. The steelmaking scrap composite is unchanged at $45.33.

PRODUCTION—The steel mills turned out record tonnage last week—estimated at about 2,350,000 net tons, compared with the previous all-time high of 2,345,000 tons in the week ended May 15 this year.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Oct. 16	Change	Same Week 1954	Same Week 1953
Pittsburgh	101.5	+ 0.5*	71	98
Chicago	98	+ 1.5	76	98.5
Mid-Atlantic	94.5	0	65	97
Youngstown	98	— 2	72	105
Wheeling	98	+ 0.5	87.5	94.5
Cleveland	99.5	— 1*	80	100.5
Buffalo	105	0	70.5	106.5
Birmingham	97.5	0	74	96.5
New England	90	+ 1	59	89
Cincinnati	91.5	+ 2	65.5	80.5
St. Louis	97.5	— 1	76.5	100.5
Detroit	94	— 4	80	100.5
Western	99	+ 3*	88	102
National Rate	97.5	+ 0.5	73.5	95

INGOT PRODUCTION‡

	Week Ended Oct. 16	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	146.3†	145.3	143.7	108.0
NET TONS (In thousands)	2,350†	2,334	2,309	1,735

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384 549 in 1954; 2,254,459 in 1953.

working Outlook—p. 67 Technical Outlook—p. 113

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Oct. 11 1955	Oct. 4 1955	Month Ago	Sept. Average
(1947-1949=100)	154.5	154.5	153.9	153.9

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Oct. 11

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1	$4.800	Sheets, Electrical	$10.200
Rails, Light, 40 lb	6.217	Strip, C.R., Carbon	7.993
Tie Plates	5.625	Strip, C.R., Stainless, 430 (lb)	0.444
Axles, Railway	8.000	Strip, H.R., Carbon	5.350
Wheels, Freight Car, 33 in. (per wheel)	52.50	Pipe, Black, Buttweld (100 ft)	16.366
Plates, Carbon	4.950	Pipe, Galv., Buttweld (100 ft)	19.971
Structural Shapes	4.867	Pipe, Line (100 ft)	158.925
Bars, Tool Steel, Carbon (lb)	0.460	Casing, Oil Well, Carbon (100 ft)	165.120
Bars, Tool Steel Alloy, Oil Hardening Die (lb)	0.560	Casing, Oil Well, Alloy (100 ft)	244.670
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.185	Tubes, Boiler (100 ft)	39.470
Bars, Tool Steels, H.R., Alloy, High Speed W 18, Cr 4, V 1 (lb)	1.680	Tubing, Mechanical, Carbon	20.980
Bars, H.R., Alloy	9.375	Tubing, Mechanical, Stainless, 304 (100 ft)	178.897
Bars, H.R., Stainless, 303 (lb)	0.450	Tin Plate, Hot-dipped, 1.25 lb	8.933
Bars, H.R., Carbon	5.350	Tin Plate, Electrolytic, 0.25 lb	7.633
Bars, Reinforcing	5.313	Black Plate, Canmaking Quality	6.733
Bars, C.F., Carbon	8.660	Wire, Drawn, Carbon	8.575
Bars, C.F., Alloy	12.175	Wire, Drawn, Stainless, 430 (lb)	0.578
Bars, C.F., Stainless, 302 (lb)	0.468	Bale Ties (bundle)	6.473
Sheets, H.R., Carbon	5.145	Nails, Wire, 8d Common	8.618
Sheets, C.R., Carbon	6.239	Wire, Barbed (80-rod spool)	7.847
Sheets, Galvanized	7.690	Woven Wire Fence (20-rod roll)	18.635
Sheets, C.R., Stainless, 302 (lb)	0.588		

STEEL's FINISHED STEEL PRICE INDEX*

	Oct. 12 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	208.90†	208.90†	207.56†	194.53	157.29
Index in cents per lb	5.661	5.661	5.623†	5.270	4.261

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$128.14	$128.14	$127.41	$117.95	$94.64
No. 2 Fdry, Pig Iron, GT	58.99	58.99	58.99	56.54	48.97
Basic Pig Iron, GT	58.49	58.49	58.49	56.04	47.72
Malleable Pig Iron, GT	59.77	59.77	59.77	57.27	49.20
Steelmaking Scrap, GT	45.33	45.33	44.33	32.00	41.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as wise noted. Delivered prices based on nearest production point

FINISHED STEEL

	Oct. 12 1955	Week Ago	Month Ago	Year Ago
Bars, H.R., Pittsburgh	4.65	4.65	4.65	4.30
Bars, H.R., Chicago	4.65	4.65	4.65	4.30
Bars, H.R., deld. Philadelphia	4.90	4.90	4.90	4.55
Bar, C.F., Pittsburgh	5.90	5.90	5.90	5.40
Shapes Std., Pittsburgh	4.60	4.60	4.60	4.25
Shapes, Std., Chicago	4.60	4.60	4.60	4.25
Shapes, deld., Philadelphia	4.88	4.88	4.88	4.53
Plates, Pittsburgh	4.50	4.50	4.50	4.225
Plates, Chicago	4.50	4.50	4.50	4.225
Plates, Coatesville, Pa.	4.50	4.50	4.50	4.225
Plates, Sparrows Point, Md.	4.50	4.50	4.50	4.225
Plates, Claymont, Del.	4.50	4.50	4.50	4.225
Sheets, H.R., Pittsburgh	4.325	4.325	4.325	4.05
Sheets, H.R., Chicago	4.325	4.325	4.325	4.05
Sheets, C.R., Pittsburgh	5.325	5.325	5.325	4.95
Sheets, C.R., Chicago	5.325	5.325	5.325	4.95
Sheets, C.R., Detroit	5.325-5.425	5.325-5.425	5.325-5.425	5.10
Sheets, Galv., Pittsburgh	5.85	5.85	5.85	5.45
Strip, H.R., Pittsburgh	4.325	4.325	4.325	4.05
Strip, H.R., Chicago	4.325	4.325	4.325	4.05
Strip, C.R., Pittsburgh	6.25†	6.25†	6.25†	5.75
Strip, C.R., Chicago	6.35†	6.35†	6.35†	6.00
Strip, C.R., Detroit	6.35	6.35	6.35	5.60-5.90
Wire, Basic, Pittsburgh	6.25	6.25	6.25	5.75
Nails, Wire, Pittsburgh	7.60	7.60	7.60	6.85
Tin plate (1.50 lb), box, Pitts.	$9.45	$9.45	$9.05	$9.05

†Revised

SEMIFINISHED STEEL

Billets, Forging, Pitts. (NT)	$84.50	$84.50	$84.50	$78.00
Wire rods, ⅜-⅞" Pitts.	5.025	5.025	5.025	4.675

PIG IRON, Gross Ton

Bessemer, Pitts.	$59.50	$59.50	$59.50	$57.00
Basic, Valley	58.50	58.50	58.50	56.00
Basic, deld. Phila.	59.16	59.16	59.16	59.66
No. 2 Fdry, Pitts.	59.00	59.00	59.00	56.50
No. 2 Fdry, Chicago	59.00	59.00	59.00	56.50
No. 2 Fdry, Valley	59.00	59.00	59.00	56.50
No. 2 Fdry, deld. Phila.	59.66	59.66	59.66	50.16
No. 2 Fdry, Birm.	55.00	55.00	55.00	52.88
No. 2 Fdry (Birm.) deld. Cin.	62.70	62.70	62.70	60.58
Malleable, Valley	59.00	59.00	59.00	56.50
Malleable, Chicago	59.00	59.00	59.00	56.50
Ferromanganese, Duquesne.	190.00†	190.00†	190.00†	190.00†

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$44.50	$44.50	$43.50	$32.50
No. 1 Heavy Melt, E. Pa.	46.50	46.50	46.50	30.50
No. 1 Heavy Melt, Chicago.	45.00	45.00	42.00	33.00
No. 1 Heavy Melt, Valley.	48.00	48.00	46.50	35.00
No. 1 Heavy Melt, Cleve.	44.50	44.50	44.00	32.00
No. 1 Heavy Melt, Buffalo.	38.50	38.50	38.50	30.50
Rails, Rerolling, Chicago	65.50	65.50	64.50	52.50
No. 1 Cast, Chicago	48.50	48.50	46.50	39.50

COKE, Net Ton

Beehive, Furn, Connlsvl.	$13.625	$13.625	$13.625	$13.75
Beehive, Fdry, Connlsvl.	16.50	16.50	16.50	16.75
Oven, Fdry, Chicago	25.75	25.75	25.75	24.50

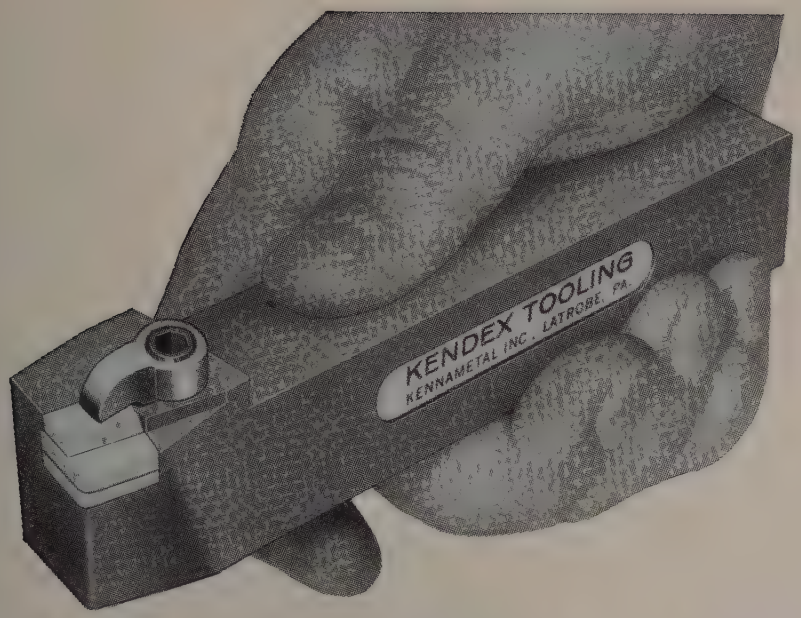
Daily Nonferrous Price Record

	Price Oct. 12	Last Change	Previous Price	Sept. Avg.	Aug. Avg.	Oct. 1954 Avg.
Copper	43.00-45.50	Oct. 7, 1955	43.00-50.00	45.380	37.759	30.000
Lead	15.30	Sept. 26, 1955	14.80	14.920	14.800	14.775
Zinc	13.00	Sept. 6, 1955	12.50	12.940	12.500	11.500
Tin	96.375	Oct. 12, 1955	96.25	96.565	96.519	93.110
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	24.40	Aug. 8, 1955	23.20-24.40	24.400	24.267	22.200
Magnesium	32.50	Aug. 16, 1955	28.50	32.500	30.574	27.000

Quotations in cents per pound ba
COPPER, deld. Conn. Valley; LEAD
mon grade, deld. St. Louis;
prime western, E. St. Louis
Straits, deld. New York; NICKE
trolytic cathodes, 99.9%, base
refinery, unpacked; ALUMINUM,
ingots, 99 + %, deld.; MAGN
99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.**
  Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.**
  Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.**
  Maybe you want to keep a continuous record of pr
  spread between various forms of steel. You can get y
  base price information from STEEL's price tables.
- **A source of information on market trends.**
  Newsy items tell you about the supply-demand situat
  of materials, including iron and steel, nonferrous me
  and scrap. Other articles analyze special situations of
  terest and importance to you.
- **Reports on iron and steel production, and materials and pr**
  uct shipments.



THE FINAL RETURN YOU GET ON ANY MACHINE YOU BOUGHT AT THE SHOW WILL BE DETERMINED BY A LITTLE TOOL LIKE THIS

You looked at many machines at the Machine Tool Builders Show. They were the most modern that man's ingenuity has been able to design and build . . . with higher powers, feeds, speeds . . . greater versatility. Perhaps you bought one . . . or more than one. Or perhaps you deferred your purchase to a later date. But, in either case, remember this: the *final* return on any machine depends on a little tool.

It will pay you to give your machines the tools they deserve . . . the BEST — whether the machine is one of the latest, high velocity automation types or an older one now in your plant.

For the latest developments in tool design and cutting grades . . . tooling for *consistent top* performance on any type of operation, or on any machine . . . look to Kennametal* for the best; because Kennametal has led the industry for years in improving tools and tooling techniques.

So, to be assured of the best . . . tooling to give the most consistent *repeat* performance, lowest cost per cutting edge and tools proved BEST — TEST AFTER TEST, specify Kennametal by *grade* and by *toolholder*.

Let a Kennametal Tool Engineer show you reports of performances with Kennametal tooling. He will be glad to help you select the right grade and tool for each operation. KENNAMETAL INC., Latrobe, Pa.

*Registered Trademark 7296

The NEW KENDEX

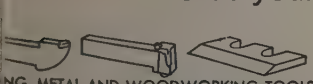
(illustrated above)

. . . combines simple but sturdy construction and the capacity to take deep cuts over a wide range of operations with inexpensive, turn-over type "throwaway" inserts. The clamp lifts for quick, accurate indexing, and is so designed that clamp forces are in the same direction as the cutting forces. Chipbreaker and shim of Kennametal, for long life, reduced machining costs. *Available immediately from stock in 17 styles and sizes.*

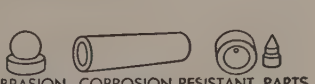
The NEW Kennametal Grade K-21

is outperforming all other carbides in the General Purpose Steel-cutting group because of its high edge strength combined with superior wear qualities and resistance to cratering. *Available in all insert styles from stock.*

Give your machines the tools they deserve . . . the BEST



INDUSTRY AND **KENNAMETAL** *...Partners in Progress*



Nonferrous Metals

ODM explains that it cannot release copper from stockpile as pressure groups insist. It denies that current tight market conditions are a matter of "common defense"

Nonferrous Metal Prices, Pages 162 & 163

PRICE INFLATION caused by civilian demand and "common defense" are birds of different feathers. This is the stand taken by the Office of Defense Mobilization in its refusal to release copper from stockpile.

Herbert Barchoff, president, Copper & Brass Warehouse Association, Washington, has suggested that 100,000 tons of Chilean copper, currently in stockpile, be released to alleviate the copper shortage.

History—The government can defer shipments of critical metals, but when such materials have been delivered, it takes a war or a Presidential decision to say that releasing the material is for "common defense." Congress placed these tight restrictions on the stockpile to avoid the dangers of a deflationary wave which could follow the injudicious release of stockpiled metals.

Advocates for releasing the red metal point to inflationary prices as something that should be thought of as a problem within the definition of "common defense." The Copper & Brass Warehouse Association based its plea on two major reasons: 1. The price of custom-smelted copper has risen (in the last six months) more than the total increase registered in the last 15 years. 2. Some 30,000 firms, representing 850,000 workers, are threatened with "cessation of activities or serious curtailment," says the association.

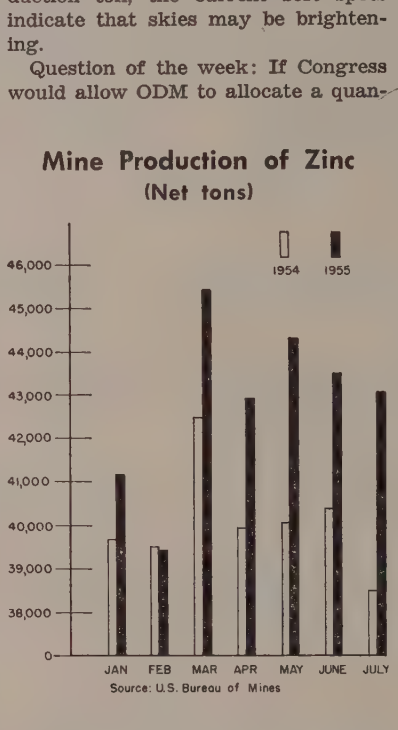
Signs of Help—While copper supplies will be tight through the first half of 1956, there are signs that the worst may be over. Copper prices on the London Metal Exchange took a nose dive last week and hovered near the 43-cent mark. If this price should stay near parity with U. S. prices, more Chilean copper could be expected within the next six months. Chile has been shipping two-thirds of its supply into the European area (because of a 7-cent differential in price) and one-third into the American market. Point of interest: When the price drops on the London Exchange, then Chile begins to think about a guaranteed price for all copper being shipped to the U. S.

More Good News—Custom smelters, taking a look at the London market decline, have dropped prices from 50 cents a pound (prevailing since Sept. 12) to a quotation of 45½-cents a pound.

While strikes in this country and Chile have taken a substantial production toll, the current soft spots indicate that skies may be brightening.

Question of the week: If Congress would allow ODM to allocate a quantity of copper on a historical basis, would the government then be accused of allocating, controlling and fixing the price of copper?

Mine Production of Zinc
(Net tons)



Source: U.S. Bureau of Mines

Miners Need Help

Andrew Fletcher, president, St. Joseph Lead Co., New York, told delegates to the American Mining Congress: "The best solution to offset increased production costs for lead, zinc and other similarly situated domestic metals is a moderate stockpiling program when production is in excess of consumption—coupled with a moderate increase in tariffs."

The St. Joe chief executive feels that an increase in the tariff would bring the following advantages: 1. U. S. prices would climb to a higher level than that of the rest of the world. 2. It would aid the American mines that need help, but not overstimulate the production of foreign mines.

Voicing approval of higher ta
W. Lunsford Long, president, T
ten Institute, reported to the M
Congress that the tungsten i
try must devise ways and mea
keeping alive. Mr. Long point
that during its four years of o
tion, the Federal Domestic Tun
Purchase Program has produce
million ton units (tungsten purc
by the government). As of Au
some 69 per cent of the prog
goal of 3 million ton units had
achieved. "If this average contin
states Mr. Long, "purchases b
government will terminate on
Sept. 1, 1956."

Export Quotas Expand

Under the licensing policy fo
fourth quarter, the Bureau of Fo
Commerce reports, exports of re
foreign copper, except that pro
from Canadian-origin copper s
will be open-ended. This means
exports will not be restricted e
to protect national security.
quarter exports were limited t
000 tons. Copper raw materials
continue to carry the third qu
limitations, with some minor cha

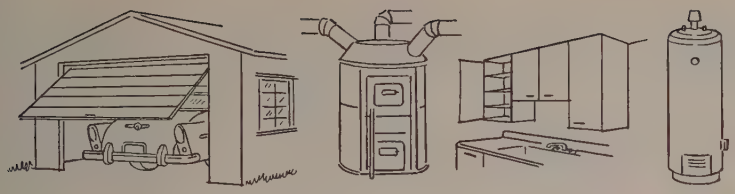
Fourth quarter export licensin
new and old aluminum scrap w
limited to a quota of 4000 tons.
includes remelt ingots. The
quarter quota was 5000 tons. E
licensing of primary and seco
ingots will continue to be open-e

Aluminum Product Sales G

Shipments of aluminum pro
continue to soar, reports the
minum Association, New
Sheet and plate shipments ju
from 107 million lb in July
August total of 130.1 million lb.
ing the first eight months of
660.6 million lb of sheet and
were shipped while the eight-m
totals for this year show shipm
of 921.0 million lb. Foil gaine
million lb over the July shipping
and all other classifications
truded products, tube, bar and
etc.) showed substantial gains

Slab Zinc Stocks Plunge A

Stocks of slab zinc, pegg
42,167 tons on Oct. 1, were the l
since May, 1952, reports Am
Zinc Institute. This was a redu
of nearly 4000 tons from the pre
month. Unfilled orders were a
lowest point for the year, reg
ing only 52,278 tons.



OLLING STEEL FOR HOME BUILDING... AT

Newport Steel

PRODUCTS OF NEWPORT STEEL

Cold-Rolled Sheets
Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Hot-Rolled Sheets
Hot-Rolled Pickled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Electrical Sheets

Capable hands of long experience guide Newport steel products through the mill and out to leading manufacturers of equipment for the home. Careful buyers find in Newport a most effective combination of modern facilities, steelmaking experience, conscientious personnel, strict adherence to precise specifications, and strategic location in the heart of the nation's fastest growing industrial area. These qualities make Newport a most dependable source for your requirements of any of the steel products listed here.

ECONOMICAL WATERAIL-TRUCK DELIVERY

Newport Steel is ideally situated on the Mississippi-Ohio river system and the great Cincinnati rail-truck hub. Barge facilities, 7 major railroads and 143 motor lines enable Newport to give economical, dependable delivery to the entire area of the Middle West and South.

Alloy Sheets and Plates
Electric Weld Line Pipe
Roofing and Siding
Eave Trough and Conductor Pipe
Culverts

Newport Steel

CORPORATION

NEWPORT, KENTUCKY

IR CONFIDENCE IS JUSTIFIED WHERE THIS FLAG FLIES

A SUBSIDIARY OF MERRITT-CHAPMAN & SCOTT CORPORATION

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 24.40, pigs 22.50. 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 26.2; No. 43, 5% Si, 26.00; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 28.20; No. 195, 4.5% Cu, 0.8% Si, 27.60; No. 214, 3.8% Mg, 27.80; No. 356, 7% Si, 0.3% Mg, 26.20.

Antimony: R.M.M. brand, 99.5%, 33.00, Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb, deld.

Cobalt: 97-99%, $2.60 per lb for 550-lb keg; $2.62 per lb for 100-lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $119.20 per lb, nom.

Copper: Electrolytic, 43.00 deld. Conn. Valley; 43.00 deld. Midwest; custom smelters, 45.50 deld.; Lake, 43.00 deld.; Fire refined, 42.75 deld.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $90-$110 nom, per troy oz.

Lead: Common, 15.30, chemical, 15.40, corroding, 15.40, St. Louis, New York basis, add 0.20.

Lithium: 99%+, cups or ingot, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: 99.8%, self-palletizing pig, 32.50; notched ingot, 33.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40 for pig and 1.45 for ingot; for Madison, Ill., add 1.20 for pig and 1.25 for ingot; for Los Angeles, add 2.00 for both pig and ingot. Sticks 1.3 in. diameter, 53.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, G, H and R, 36.00; alloy M, 38.00, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40; for Madison, Ill., add 0.50; for Los Angeles, add 2.50.

Mercury: Open market, spot, New York, $274-$278 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced, $3-$3.25 per lb; pressed ingot, $4.06 per lb; sintered ingot, $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 64.50; 10-lb pigs, unpacked, 67.65; "XX" nickel shot, 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $80-$100, nom., per troy oz.

Palladium: $22-$24 per troy oz.

Platinum: $91-$96 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $45-$55 per troy oz.

Selenium: 99.5%, $9-$10 per lb.

Silver: Open market, 91.875 per troy oz.

Sodium: 16.50, c.l.; 17.00, l.c.l.

Tantalum: Sheet, rod, $68.70 per lb; powder, $56.63 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot 96.375; prompt, 96.125.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max), $3.95, grade A-2 (0.5% Fe max), $3.50 per pound.

Tungsten: Powder, 98.8%, carbon, reduced, 1000-lb lots, $4.50 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99+% hydrogen reduced, $4.65. Treated ingots, $6.70.

Zinc: Prime Western, 13.00; brass special, 13.25; intermediate, 13.50, E. St. Louis, freight allowed over 0.50 per pound. High grade, 14.35; special high grade, 14.50, deld. Diecasting alloy ingot No. 3, 17.25; No. 2, 18.25; No. 5, 17.75, deld.

Zirconium: Ingots, commercial grade, $14.40 per lb; low-hafnium reactor grade, $23.07. Sponge, $10 per lb. Powder electronics grade, $15 per lb; flash grade, $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 31.00-33.00; No. 12 foundry alloy (No. 2 grade), 31.25-31.50; 5% silicon alloy, 0.60 Cu max, 32.75-33.00; 13 alloy, 0.60 Cu max, 32.75-33.00; 195 alloy, 32.75-33.25; 108 alloy, 31.50-32.00. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 31.00-32.25; grade 2, 30.00-31.25; grade 3, 29.25-30.50; grade 4, 28.50-30.00.

Brass Ingot: Red brass No. 115, 42.50; tin bronze No. 225, 56.50; No. 245, 48.75; high-leaded tin bronze No. 305, 45.75; No. 1 yellow No. 405, 34.75; manganese bronze No. 421, 38.25.

Magnesium Alloy Ingot: AZ63A, 34.00; AZ91B, 34.00; AZ91C, 34.00; AZ92A, 34.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.84; rod, bar, wire, $1.81.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000-lb lots, 48.35; 30,000-lb lots 48.88; l.c.l., 48.98. Weatherproof, 100,000-lb lots, 46.03; 30,000-lb lots, 46.28; l.c.l., 46.78. Magnetic wire deld., 15,000 lb or more, 55.52; l.c.l., 56.27.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more, $21 per cwt; pipe, full coils, $21 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $14.00-$14.50; sheared mill plate, $11.00; strip, $14.00-$14.50; wire, $10.00-$10.50; forging billets, $8.75; hot-rolled and forged bars, $8.75.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets, 23.00; ribbon zinc in coils, 20.50; plates 19.50-22.25.

ZIRCONIUM

Plate, $22; H.R. strip, $19; C.R. strip, $29; forged or H.R. bars, $17; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks	...	65	...

ALUMINUM

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	—Round— 2011-T3	2017-T4	—Hexagonal— 2011-T3	2017-T4
Drawn				
0.125	67.9	66.4	...	...
0.156-0.172	57.5	55.9	...	...
0.188	57.5	55.9	...	71.7
0.219-0.234	54.5	52.9	...	...
0.250-0.281	54.5	52.9	...	68.4
0.313	54.5	52.9	...	65.2
Cold-finished				
0.375-0.547	53.4	51.4	63.7	61.3
0.563-0.688	53.4	51.4	60.6	57.5
0.750-1.000	52.1	50.1	55.4	54.2
1.063	52.1	50.1	...	52.3
1.125-1.500	50.1	48.2	53.6	52.3
Rolled				
1.563	48.8	46.9	...	...
1.625-2.000	48.2	46.2	...	50.5
2.125-2.500	47.0	45.0	...	...
2.563-3.375	45.6	43.6	...	...

ALUMINUM

Sheets and Circles: 1100 and 3003 mill (30,000 lb base; freight allowed)

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet
0.249-0.136	37.5	42.3	...
0.135-0.096	38.0	43.2	...
0.095-0.077	38.7	44.2	36.1
0.076-0.061	39.3	45.1	36.3
0.060-0.048	39.9	45.6	36.7
0.047-0.038	40.4	46.5	37.2
0.037-0.030	40.8	47.0	37.6
0.029-0.024	41.4	47.5	37.9
0.023-0.019	42.2	49.0	38.8
0.018-0.017	43.0	...	39.4
0.016-0.015	43.9	...	40.2
0.014	44.9	...	41.2
0.013-0.012	46.1	...	41.9
0.011	47.1	...	43.1
0.010-0.0095	48.4	...	44.3
0.009-0.0085	49.7	...	45.8
0.008-0.0075	51.3	...	47.0
0.007	52.8	...	48.5
0.006	54.4	...	49.9

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-24-60 in. width or diam. 72-240 in. leng

Alloy	Plate Base	Circ
1100-F, 3003-F	36.5	
5050-F	37.6	
3004-F	38.6	
5052-F	39.9	
6061-T6	41.1	
2024-T4*	43.6	
7075-T6*	51.4	

*24-48 in. widths or diam, 72-180 in. l

ALUMINUM

Forging Stock: Round, Class 1, 39.1 in specific lengths 36-144 in., diameters 8 in. Rectangles and squares, Class 1, 56.20 in random lengths, 0.375-4 in. widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T lengths, plain ends, 90,000-lb base, per

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$16.85	2	
1	26.50	4	
1¼	35.85	6	
1½	42.90	8	

MAGNESIUM

Sheet: AZ31, commercial grade, 0.0 99c; 0.064 in., 78.00c; 0.125 in., 63.50c, lb and over, f.o.b. mill.

Plate: AZ31, 61.00c, 30,000 lb or mor in. and over, widths 24-60 in., lengths in.; tread plate, 64.00c, 30,000 lb or m in. thick, widths 24-60 in., lengths 60- tooling plate, 66.00c, 30,000 lbs or mor 3.000 in., widths 60-72 in., lengths 72-

Extrusions: AZ31 commercial grade, gles, ¼ x 2 in., 64.70c; 1 x 4 in., 69.5 1 in., 61.50c; 2 in., 59.00c. Tubing, 1 x 0.065 in., 82.50c; Angles, 1 x 1 x 68.40c; 2 x 2 x ¼-in., 62.50c. Char in., 63.40c. I-beams, 5 in., 62.70c.

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton

Aluminum: 1100 clippings, 19.50; old 17.50-18.00; borings and turnings, 11.0 crankcases, 17.50-18.00; industrial c 17.50-18.00.

Copper and Brass: No. 1 heavy cop wire, 35.00-35.50; No. 2 heavy cop wire, 34.00-34.50; light copper, 32. No. 1 composition red brass, 28.00-28. 1 composition turnings, 26.00-26.50;

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWAN	
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends
Copper	62.76b	60.36c	....	62.82	39.000	39.000
Yellow Brass	52.27	42.41d	52.81	55.18	28.875	28.625
Red Brass, 85%	58.09	58.03	58.63	60.90	34.250	34.000
Low Brass, 80%	56.55	56.49	57.09	59.36	32.750	32.250
Naval Brass	55.63	49.94	62.69	58.79	26.750	26.500
Com. Bronze, 90%	60.18	60.12	60.72	62.74	35.750	35.500
Nickel Silver, 10%	66.00	68.33g	68.33	....	32.500	32.250
Phos. Bronze, A, 5%	80.99	81.49	81.49	82.67	39.250	39.000
Silicon Bronze	66.54	65.73	66.58	68.68e	37.625	37.375
Manganese Bronze	59.37	53.38	63.82	....	27.000	26.750
Muntz Metal	53.74	49.55	....	....	27.000	26.750

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g.

turnings, 15.50-16.00; new brass clip-
, 23.00-23.50; light brass, 15.50-16.00;
yellow brass, 17.50-18.00; new brass
ends, 22.00-22.50; auto radiators, un-
ed, 21.00-21.50; cocks and faucets, 23.00-
; brass pipe, 23.50-24.00
: Heavy, 12.00-12.50; battery plates, 6.50-
linotype and stereotype, 14.00-14.75; elec-
pe, 12.00-12.75; mixed babbitt, 14.50.
esium: Clippings, 18.50-19.50; clean cast-
18.00-19.00; iron castings, not over 10%
vable Fe, less full deduction for Fe, 16.00-

l: Clippings, 54.50-60.00; old sheets,
-50.00; turnings, 44.00; rods, 54.50-60.00.
l: Sheets and clips, 90.00-125.00; rolled
s, 90.00-125.00; turnings, 75.00-100.00;
nds, 90.00-125.00.
Old zinc, 5.50-6.00; new die-cast scrap,
.75; old die-cast scrap; 3.50-4.00.

REFINER'S BUYING PRICES

s per pound, carlots, delivered refinery)

inum: 1100 clippings, 22.50-23.00; 3003
ngs, 22.75-23.00; 6151 clippings, 22.75-
; 5052 clippings, 22.75-23.00; 2014 clip-
, 21.00-22.00; 2017 clippings, 20.00-22.00;
clippings, 21.00-22.00; mixed clippings,
-22.50; old sheet, 19.00-21.50; old cast,
-21.50; clean old cable (free of steel),
; borings and turnings 19.50-20.50.

lium Copper: Heavy scrap, 0.020-in. and
er, not less than 1.5% Be, 65.00; light
, 60.00; turnings and borings, 43.00-55.00.

er and Brass: No. 1 copper and wire,
; No. 2 copper and wire, 37.50; light
r, 35.25; refinery brass (60% copper)
dry copper content, 35.50.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

er and Brass: No. 1 copper and wire,
; No. 2 copper and wire, 37.50; light
r 35.25; No. 1 composition borings, 31.00;
1 composition solids, 31.50; heavy yellow
solids, 24.00; yellow bras turnings,
; radiators, 25.75.

PLATING MATERIAL

b. shipping point, freight allowed on
tities)

ANODES

nium: Special or patented shapes, $1.70
lb.

per: Flat-rolled, 59.42, oval, 58.92,
-10,000 lb; electrodeposited, 56.78, 2000-
lb lots; cast 62.54, 5000-10,000 lb quanti-

el: Depolarized, less than 100 lb, $1.015;
99 lb, 99.50; 500-4999 lb, 95.50; 5000-
9 lb, 93.50; 30,000 lb, 91.50. Carbonized,
ct 3 cents a lb. All prices eastern delivery
tive Jan. 1, 1955.
Bar or slab, less than 200 lb, $1.145;
99 lb, $1.13; 500-999 lb, $1.125; 1000
r more, $1.12.
: Balls, 21.00; flat tops, 21.00; flats,
5; ovals, 22.00, ton lots.

CHEMICALS

nium Oxide: $2.15 per lb, in 100-lb drums.
mic Acid: Less than 10,000 lb, 28.50; over
00 lb, 27.50.
per Cyanide: 100-1000 lb, 80.00; 1000 lb
over, 78.00; effective Sept. 1, 1955.
per Sulphate: Crystal, 100 lb, 21.50; 200 lb,
0; 300 lb. 17.50; 400 lb, 17.00; 500-1900
15.50; 2000-10,000 lb, 15.25; 10,000 lb and
15.15. Powder, add 0.5 to above prices. Ef-
ive Mar. 29, 1955.
el Chloride: 100 lb, 46.50; 200 lb, 44.50;
lb, 35.25; 400-4900 lb, 33.25; 5000-35,900
0; 10 000 lb and over, 38.50. All prices
ern delivery, effective Jan. 1, 1955.
el Sulphate: 100 lb, 38.25; 200 lb, 36.25;
lb, 35.25; 400-4900 lb, 33.25; 5000-35,900
31.25; 36.000 lb, 30.25. All prices eastern
very, effective Jan. 1, 1955.
er Cyanide: (Cents per ounce) 4-oz bottle,
25; 16-oz bottle, 81.875; 80-oz bottle,
75; 100-oz bottle, 79.375; f.o.b. St. Louis,
York and Los Angeles. Effective Apr. 6,
5.
ium Cyanide: Egg, under 1000 lb, 19.80;
-19,900 lb, 18.80; 20,000 lb and over,
0; granular, add 1-cent premium to above.
ium Stannate: Less than 100 lb, 72.50;
400 lb, 58.10; 700-1900 lb, 55.70; 2000-
lb, 53.90; 10,000 lb or more, 52.80.
nous Chloride (Anhydrous): Less than 50
$1.588; 50 lb, $1.248; 100-300 lb, $1.098;
900 lb, $1.074; 1000-1900 lb, $1.049; 2000-
lb, $1.013; 5000-19,900 lb, 95.20; 20,000
r more, 89.10.
nous Sulphate: Less than 50 lb, $1.287;
lb, 98.70; 100-1900 lb, 96.70; 2000 lb or
e, 94.70.
Cyanide: Under 1000 lb, 54.30; 1000 lb
over, 52.30.

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. *Changes shown in italics.*
Code numbers following mill points indicate producing company. Key on page 165. Key to footnotes, page 167.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$65.50

INGOTS, Alloy (NT)

Detroit R7 .....$69.00
Houston S5 .....74.00
Midland,Pa. C18 .....69.00
Munhall,Pa. U5 .....69.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)

Aliquippa,Pa. J5 ....$68.50
Bessemer,Pa. U5 .....68.50
Bridgeport,Conn. N19..73.50
Buffalo R2 .....68.50
Clairton,Pa. U5 .....68.50
Ensley,Ala. T2 .....68.50
Fairfield,Ala T2 .....68.50
Fontana,Calif. K1 ....76.00
Gary,Ind. U5 .....68.50
Johnstown,Pa. B2 ....68.50
Lackawanna,N.Y. B2 ..68.50
LoneStar,Tex. L6 ....74.50
Munhall, Pa. U5 .....68.50
Pittsburgh J5 .....68.50
S.Chicago,Ill. R2, U5..68.50
S.Duquesne,Pa. U5 ...68.50
Youngstown R2 .....68.50

Carbon, Forging (NT)

Aliquippa,Pa. J5 ....$84.50
Bessemer,Pa. U5 .....84.50
Bridgeport,Conn. N19..89.50
Buffalo R2 .....84.50
Canton,O. R2 .....86.50
Clairton,Pa. U5 .....84.50
Conshohocken,Pa. A3..89.50
Ensley,Ala. T2 .....84.50
Fairfield,Ala. T2 .....84.50
Fontana, Calif. K1 ....92.00
Gary,Ind. U5 .....84.50
Geneva,Utah C11 ....84.50
Houston S5 .....89.50
Johnstown,Pa. B2 ....84.50
Lackawanna,N.Y. B2..84.50
LosAngeles B3 .....94.00
Midland,Pa. C18 .....84.50
Munhall,Pa. U5 .....84.50
Pittsburgh J5 .....84.50
Seattle B3 .....98.00
S.Chicago R2,U5,W14..84.50
S.Duquesne,Pa. U5 ....84.50
S.SanFrancisco B3 ....94.00

Alloy, Forging (NT)

Bethlehem,Pa. B2 ...$96.00
Buffalo R2 .....96.00
Canton,O. R2, T7 ...96.00
Conshohocken,Pa. A3..103.00
Detroit R7 .....96.00
Fontana,Calif. K1 ....115.00
Gary,Ind. U5 .....96.00
Houston S5 .....101.00
Ind.Harbor,Ind. Y1 ...96.00
Johnstown,Pa. B2 ....96.00
Lackawanna,N.Y. B2 ..96.00
LosAngeles B3 .....116.00
Massillon,O. R2 .....96.00
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
S.Chicago R2,U5,W14..96.00
S.Duquesne,Pa. U5 ...96.00
Struthers,O. Y1 .....96.00
Warren,O. C17 .....96.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 .....$103.50
Canton,O. R2 .....103.50
Cleveland R2 .....103.50
Gary,Ind. U5 .....103.50
S.Chicago R2, W14 ...103.50
S.Duquesne,Pa. U5 ...103.50

SKELP

Aliquippa,Pa. J5 ....4.325
LoneStar,Tex. L6 ....4.625
Munhall,Pa. U5 .....4.225
SparrowsPoint,Md. B2..4.225
Warren,O. R2 .....4.225
Youngstown R2, U5 ...4.225

WIRE RODS

AlabamaCity,Ala. R2 ..5.025
Aliquippa,Pa. J5 .....5.025
Alton,Ill. L1 .....5.20
Buffalo B11, W12 ....5.025
Cleveland A7 .....5.025
Donora,Pa. A7 .....5.025
Fairfield,Ala. T2 .....5.025
Houston S5 .....5.275
IndianaHarbor,Ind. Y1.5.025
Johnstown,Pa. B2 ....5.025
Joliet,Ill. A7 .....5.025
KansasCity,Mo. S5 ....5.275
Kokomo,Ind. C16 ....5.125
LosAngeles B3 .....5.825
Minnequa,Colo. C10 ...5.275
Monessen,Pa. P7 .....5.025
N.Tonawanda,N.Y. B11..5.025
Pittsburg,Calif. C11 ...5.675
Portsmouth P12 .....5.025
Roebling,N.J. R5 ....5.125
S.Chicago,Ill. R2 .....5.025
SparrowsPoint,Md. B2..5.125
Sterling,Ill.(1) N15 ....5.025
Sterling,Ill. N15 .....5.125
Struthers,O. Y1 .....5.025
Worcester,Mass. A7 ...5.325

STRUCTURALS

Carbon Steel Std. Shapes

Ala.City,Ala. R2 .....4.60
Aliquippa,Pa. J5 .....4.60
Bessemer,Ala. T2 .....4.60
Bethlehem,Pa. B2 .....4.65
Birmingham C15 .....4.60
Clairton,Pa. U5 .....4.60
Fairfield,Ala. T2 .....4.60
Fontana,Calif. K1 ....5.25
Gary,Ind. U5 .....4.60
Geneva,Utah C11 .....4.60
Houston S5 .....4.70
Ind.Harbor,Ind. I-2 ....4.60
Johnstown,Pa. B2 ....4.65
KansasCity,Mo. S5 ....4.70
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.30
Minnequa,Colo. C10 ....4.90
Munhall,Pa. U5 .....4.60
Niles,Calif. P1 .....4.90
Portland,Oreg. O4 ....5.35
Phoenixville,Pa. P4 ....5.15
Seattle B3 .....5.35
S.Chicago U5, W14 ....4.60
S.SanFrancisco B3 ....5.25
Torrance,Calif. C11 ....5.30
Weirton,W.Va. W6 ....4.60

Wide Flange

Bethlehem,Pa. B2 .....4.65
Clairton,Pa. U5 .....4.60
Fontana,Calif. K1 .....5.40
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 .....4.60
Phoenixville,Pa. P4 ....5.15
S.Chicago,Ill. U5 .....4.60

Alloy Std. Shapes

Clairton,Pa. U5 .....5.65
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....5.65
Houston S5 .....5.75
Munhall,Pa. U5 .....5.65
S.Chicago,Ill. U5 .....5.65

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 .....6.75
Bessemer.Ala. T2 .....6.75
Bethlehem,Pa. B2 .....6.80
Clairton,Pa. U5 .....6.75
Fairfield,Ala. T2 .....6.75
Fontana,Calif. K1 ....7.40
Gary,Ind. U5 .....6.75
Geneva,Utah C11 .....6.75
Houston S5 .....6.85
Ind.Harbor,Ind. I-2, Y1.6.75
Johnstown,Pa. B2 ....6.80
KansasCity,Mo. S5 ....6.85
Lackawanna,N.Y. B2 ..6.80
LosAngeles B3 .....7.45
Munhall,Pa. U5 .....6.75
Seattle B3 .....7.50
S.Chicago,Ill. U5, W14..6.75
S.SanFrancisco B3 ....7.40
Struthers,O. Y1 .....6.75

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 ....6.80
Lackawanna,N.Y. B2 ...6.80
Munhall,Pa. U5 .....6.75
S.Chicago,Ill. U5 .....6.75

PILING

BEARING PILES

Bethlehem,Pa. B2 .....4.65
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 .....4.60
S.Chicago,Ill. U5 .....4.60

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ....5.45
Lackawanna,N.Y. B2 ...5.45
Munhall,Pa. U5 .....5.45
S.Chicago,Ill. U5 .....5.45

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 .....4.50
Aliquippa,Pa. J5 .....4.50
Ashland,Ky.(15) A10 ...4.50
Bessemer,Ala. T2 .....4.50
Bridgeport,Conn. N19 ..4.75
Buffalo R2 .....4.50
Clairton,Pa. U5 .....4.50
Claymont,Del. C22 ....4.50
Cleveland J5, R2 .....4.60
Coatesville,Pa. L7 ....4.50
Conshohocken,Pa. A3 ..4.50
Detroit M1 .....4.60
Ecorse,Mich. G5 .....4.60
Fairfield,Ala. T2 .....4.50
Fontana,Calif.(30) K1 ..5.15
Gary,Ind. U5 .....4.50
Geneva,Utah C11 .....4.50
GraniteCity,Ill. G4 ....4.70
Harrisburg,Pa. C5 .....5.10
Houston S5 .....4.60
Ind.Harbor,Ind. I-2, Y1.4.50
Johnstown,Pa. B2 ....4.50
Lackawanna,N.Y. B2 ...4.50
LoneStar,Tex. L6 .....4.85
Mansfield,O. E6 .....4.50
Minnequa,Colo. C10 ....5.35
Munhall,Pa. U5 .....4.50
Newport,Ky. N9 .....4.50
Pittsburgh J5 .....4.50
Riverdale,Ill. A1 .....4.50
Seattle B3 .....5.40
Sharon,Pa. S3 .....4.50
S.Chicago R2, U5, W14.4.50
SparrowsPoint,Md. B2 ..4.50
Steubenville,O. W10 ....4.50
Warren,O. R2 .....4.50
Weirton,W.Va. W6 ....4.50
Youngstown R2, U5, Y1.4.50

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 .....6.30
Geneva,Utah C11 .....5.65
Johnstown,Pa. B2 .....5.65
SparrowsPoint,Md. B2 ..5.65

PLATES, Wrought Iron

Economy,Pa. B14 .....10.40

PLATES,High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.725
Bessemer,Ala. T2 .....6.725
Clairton,Pa. U5 .....6.725
Cleveland J5, R2 ....6.725
Claymont,Del. C22 ....6.725
Coatesville,Pa. L7 ....6.725
Conshohocken,Pa. A3 ..6.725
Ecorse,Mich. G5 .....6.825
Fairfield,Ala. T2 .....6.725
Fontana,Calif.(30) K1 .7.375
Gary,Ind. U5 .....6.725
Geneva,Utah C11 .....6.725
Houston S5 .....6.825
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 ....6.725
LosAngeles B3 .....7.625
Munhall,Pa. U5 .....6.725
Pittsburgh J5 .....6.725
Seattle B3 .....7.625
Sharon,Pa. S3 .....6.725
S.Chicago,Ill. U5, W14.6.725
SparrowsPoint,Md. B2..6.725
Youngstown U5, Y1 ...6.725

PLATES, Alloy

Bridgeport,Conn. N19 ...6.55
Claymont,Del. C22 ....6.30
Coatesville,Pa. L7 ....6.30
Fontana,Calif. K1 .....6.95
Gary,Ind. U5 .....6.30
Houston S5 .....6.40
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 ....6.30
Munhall,Pa. U5 .....6.30
Newport,Ky. N9 .....6.30
Seattle B3 .....7.20
Sharon,Pa. S3 .....6.30
S.Chicago,Ill. U5, W14..6.30
SparrowsPoint,Md. B2 ..6.30
Youngstown Y1 .....6.30

FLOOR PLATES

Cleveland J5 .....5.575
Conshohocken,Pa. A3 ..5.575
Harrisburg,Pa. C5 ....5.575
Ind.Harbor,Ind. I-2 ...5.575
Munhall,Pa. U5 .....5.575
S.Chicago,Ill. U5 .....5.575

PLATES, Ingot Iron

Ashland c.l. (15) A10...4.75
Ashland l.c.l. (15) A10..5.25
Cleveland c.l. R2 .....5.10
Warren,O. c.l. R2 .....5.10

BARS

BARS, Hot-Rolled Carbon

Ala.City,Ala. R2 .....4.65
Aliquippa,Pa. J5 .....4.65
Alton,Ill. L1 .....4.85
Atlanta A11 .....4.85
Bessemer,Ala. T2 .....4.65
Birmingham C15 .....4.65
Bridgeport,Conn. N19 ..4.80
Buffalo R2 .....4.85
Canton,O. R2 .....4.75
Clairton,Pa. U5 .....4.65
Cleveland R2 .....4.65
Ecorse,Mich. G5 .....4.75
Emeryville,Calif. J7 ....5.40
Fairfield,Ala. T2 .....4.65
FairlessHills,Pa. U5 ....4.50
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.65
Houston S5 .....4.90
Ind.Harbor,Ind. I-2, Y1.4.65
Johnstown,Pa. B2 .....4.65
Joliet,Ill. P22 .....4.65
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.75
Midland,Pa. C18 .....4.65
Milton,Pa. M18 .....4.65
Minnequa,Colo. C10 ....5.10
Niles,Calif. P1 .....5.00
N.Tonawanda,N.Y. B11..4.65
Pittsburg,Calif. C11 ....5.35
Pittsburgh J5 .....4.65
Portland,Oreg. O4 .....5.40
Seattle B3, N14 .....5.40
S.Chicago R2, U5, W14..4.65
S.Duquesne,Pa. U5 ....4.65
S.SanFran.,Calif. B3 ...5.40
Sterling,Ill.(1) N15 ....4.65
Sterling,Ill. N15 .....4.75
Struthers,O. Y1 .....4.65
Torrance,Calif. C11 ....5.35
Warren,O. R2 .....4.65
Weirton,W.Va. W6 .....4.65
Youngstown R2, U5 ...4.65

BARS, H.R. Leaded Alloy

Warren,O. C17 .....6.325

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ....5.575
Bridgeport,Conn. N19 ..5.725
Buffalo R2 .....5.575
Canton,O. R2, T7 ....5.575
Clairton,Pa. U5 .....5.575
Detroit R7 .....5.575
Ecorse,Mich. G5 .....5.675
Fontana,Calif. K1 .....6.625
FairlessHills,Pa. U5 ....5.725
Gary,Ind. U5 .....5.575
Houston S5 .....5.825
Ind.Harbor,Ind. I-2,Y1.5.575
Johnstown,Pa. B2 ....5.575
KansasCity,Mo. S5 ....5.825
Lackawanna,N.Y. B2 ...5.575
LosAngeles B3 .....6.625
Massillon,O. R2 .....5.575
Midland,Pa. C18 .....5.575
S.Chicago R2, U5, W14..5.575
S.Duquesne,Pa. U5 ....5.575
Struthers,O. Y1 .....5.575
Warren,O. C17 .....5.575
Youngstown U5 .....5.575

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.80
Bessemer,Ala. T2 .....6.80
Bethlehem,Pa. B2 .....6.80
Clairton,Pa. U5 .....6.80
Cleveland R2 .....6.80
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....6.80
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
Ind.Harb.,Ind. I-2, Y1 ..6.80
Johnstown,Pa. B2 .....6.80
KansasCity,Mo. S5 ....7.05
Lackawanna,N.Y. B2 ...6.80
LosAngeles B3 .....7.50
Pittsburgh J5 .....6.80
Seattle B3 .....7.55
S.Chicago W14 .....6.80
S.Duquesne,Pa. U5 .....6.80
S.SanFrancisco B3 ....7.55
Struthers,O. Y1 .....6.80
Warren,O. R2 .....6.80
Youngstown U5 .....6.80

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 .....4.80

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....4.65
Atlanta A11 .....4.85
Fontana,Calif. K1 .....5.35
Niles,Calif. P1 .....5.00
Pittsburgh J5 .....
Portland,Oreg. O4 .....
SanFrancisco S7 .....

BAR SHAPES, Hot-Rolled

Clairton,Pa. U5 .....
Gary,Ind. U5 .....
Houston S5 .....
KansasCity,Mo. S5 ..
Youngstown U5 .....

BARS, C.F. Leaded Alloy

Ambridge,Pa. W18 ..
Camden,N.J. P13 ...
Chicago W18 .....
Cleveland C20 .....
Monaca, Pa. S17 ...
Newark,N.J. W18 ..
SpringCity,Pa. K3 ..
Warren,O. C17 .....

BARS, Cold-Finished Carb

Ambridge,Pa. W18 ..
BeaverFalls,Pa. M12, R
Buffalo B5 .....
Camden,N.J. P13 ....
Carnegie,Pa. C12 ...
Chicago W18 .....
Cleveland A7, C20 ..
Detroit R7 .....
Detroit B5, P17 .....
Donora,Pa. A7 .....
Elyria,O. W18 .....
FranklinPark,Ill. N5 .
Gary,Ind. R2 .....
GreenBay,Wis. F7 ...
Hammond,Ind. L2, M1
Hartford,Conn. R2 ...
Harvey,Ill. B5 .....
LosAngeles R2, S30 ...
Mansfield,Mass. B5 ..
Massillon,O. R2, R8 ..
Midland,Pa. C18 ....
Monaca,Pa. S17 .....
Newark,N.J. W18 ....
NewCastle,Pa.(17) B4
Pittsburgh J5 .....
Plymouth,Mich. P5 ...
Putnam,Conn. W18 ...
Readville,Mass. C14 ...
S.Chicago,Ill. W14 ...
SpringCity,Pa. K3 ...
Struthers,O. Y1 .....
Waukegan,Ill. A7 ...
Worcester,Mass. W19 ..
Youngstown F3, Y1 ...

BARS, Cold-Finished Carb (Turned and Ground)

Cumberland,Md. C19 ..

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....
BeaverFalls,Pa.M12,R2
Bethlehem,Pa. B2 ....
Buffalo B5 .....
Camden,N.J. P13 ....
Canton,O. T7 .....
Carnegie,Pa. C12 ....
Chicago W18 .....
Cleveland A7, C20 ...
Detroit R7 .....
Detroit B5, P17 .....
Donora,Pa. A7 .....
Elyria,O. W8 .....
Gary,Ind. R2 .....
GreenBay,Wis. F7 ....
Hammond,Ind. L2, M13
Hartford,Conn. R2 ...
Harvey,Ill. B5 .....
Lackawanna,N.Y. B2 ..
LosAngeles S30 .....
Mansfield,Mass. B5 ...
Massillon,O. R2, R8 ..
Midland,Pa. C18 .....
Monaca,Pa. S17 .....
Newark,N.J. W18 ....
Plymouth,Mich. P5 ...
S.Chicago W14 .....
SpringCity,Pa. K3 ....
Struthers,O. Y1 .....
Warren,O. C17 .....
Waukegan,Ill A7 ....
Worcester,Mass. A7 ...
Youngstown F3, Y1 ...

BARS, Reinforcing (To Fabricators)

Ala.City,Ala R2 .....
Atlanta A11 .....
Birmingham C15 .....
Buffalo R2 .....
Cleveland R2 .....
Ecorse,Mich. G5 .....
Emeryville,Calif. J7 ..
Fairfield,Ala. T2 .....
FairlessHills,Pa. U5 ...
Fontana,Calif. K1 ....
Ft.Worth,Tex.(42) T4 ..
Gary,Ind. U5 .....
Houston S5 .....

arbor,Ind. I-2, Y1 4.65
town,Pa. B2 ..... 4.65
,Ill. P22 ..... 4.65
sCity,Mo. S5 ..... 4.90
awanna,N.Y. B2 .. 4.65
ngeles B3 ..... 5.35
n,Pa. M18 ..... 4.65
equa,Colo. C10 .... 5.10
Calif. P1 ..... 5.00
urg,Calif. C11 .... 5.35
urgh J5 ..... 4.65
and,Oreg. O4 ..... 5.40
Springs,Okla. S5 .. 5.15
le B3, N14 ..... 5.40
cago R2 ..... 4.65
quesne,Pa. U5 .... 4.65
Francisco B3 ..... 5.40
owsPoint,Md. B2 .. 4.65
ng,Ill.(1) N15 .... 4.65
ng,Ill. N15 ..... 4.75
hers,O. Y1 ..... 4.65
nce,Calif. C11 .... 5.35
gstown R2, U5, Y1 4.65

Reinforcing
bricated; to Consumers)

itown,Pa. ¼-1" B2 6.15
asCity,Kans. S5 .... 6.45
awanna,N.Y. B2 .. 6.17
n,O. P11 ..... 5.90
urgh U8 ..... 6.17
le B3, N14 ..... 6.60
rowsPt. ½-1" B2 .. 6.15
msport,Pa. S19 .. 6.00

STEEL BARS

Pa.(3) J8 ..... 4.25
goHts.(3) C2, I-2.. 4.55
goHts.(4) C2, I-2.. 4.65
orth,Tex.(26) T4 .. 4.95
klin,Pa.(3) F5 .... 4.55
klin,Pa.(4) F5 .... 4.65
on,O.(3) P11 ..... 4.50
ie,Ill.(3) R2 ..... 4.65
wanda(3) B12 .... 4.50
wanda(4) B12 .... 4.65
msport,Pa.(3) S19 4.65

Wrought Iron

omy,Pa.(S.R.)B14 11.50
omy,Pa.(D.R.)B14 14.30
omy(Staybolt)B14 14.65
Rks.(S.R.) L5 ... 11.50
Rks.(D.R.) L5 ... 16.00
Rks.(Staybolt) L5. 17.00

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City,Ala. R2 ..... 4.325
Allenport,Pa. P7 ..... 4.325
Ashland,Ky.(8) A10 .... 4.325
Cleveland J5, R2 ..... 4.325
Conshohocken,Pa. A3 .. 4.375
Detroit(8) M1 ..... 4.425
Dravosburg,Pa. U5 .... 4.325
Ecorse,Mich. G5 ..... 4.425
Fairfield,Ala. T2 ..... 4.325
FairlessHills,Pa. U5 ... 4.375
Fontana,Calif. K1 .... 5.075
Gary,Ind. U5 ..... 4.325
Geneva,Utah C11 ..... 4.425
GraniteCity,Ill. G4 .... 4.525
Ind.Harbor,Ind. I-2, Y1. 4.325
Kokomo,Ind. C16 ..... 4.425
Lackawanna,N.Y. B2 .. 4.325
Mansfield,O. E6, (37).. 4.325
Munhall,Pa. U5 ..... 4.325
Newport,Ky.(8) N9 .... 4.325
Niles,O. N12 ..... 4.325
Pittsburg,Calif. C11 ... 5.025
Pittsburgh J5 ..... 4.325
Portsmouth,O. P12 .... 4.325
Riverdale,Ill. A1 ..... 4.325
Sharon,Pa. S3 ..... 4.325
S.Chicago,Ill. W14 .... 4.325
SparrowsPoint,Md. B2. 4.325
Steubenville,O. W10 ... 4.325
Warren,O. R2 ..... 4.325
Weirton,W.Va. W6 .... 4.325
Youngstown U5, Y1 .. 4.325

SHEETS, H.R. (19 Ga. & Lighter)

Ala.City,Ala. R2 ..... 5.625
Kokomo,Ind. C16 .... 5.475
Niles,O. N12 ..... 5.325

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 .... 7.20
Youngstown Y1 ..... 7.20

SHEETS, H.R. (14 Ga. & Heavier) High-Strength Low-Alloy

Cleveland J5, R2 ..... 6.375
Conshohocken,Pa. A3 .. 6.425
Dravosburg,Pa. U5 .... 6.375
Ecorse,Mich. G5 ..... 6.475
Fairfield,Ala. T2 ..... 6.375
FairlessHills,Pa. U5 ... 6.425
Fontana,Calif. K1 .... 7.125
Gary,Ind. U5 ..... 6.375
Ind.Harbor,Ind. I-2, Y1 6.375
Lackawanna(35) B2 .. 6.375
Munhall,Pa. U5 ..... 6.375
Pittsburgh J5 ..... 6.375
Sharon,Pa. S3 ..... 6.375
S.Chicago,Ill. U5 ..... 6.375
SparrowsPoint(36) B2.. 6.375
Warren,O. R2 ..... 6.375
Weirton,W.Va. W6 .... 6.375
Youngstown U5, Y1 .... 6.375

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ... 4.575
Cleveland R2 ..... 4.925
Ind.Harbor,Ind. I-2 ... 4.575
Warren,O. R2 ..... 4.925

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 ..... 5.325
Cleveland J5, R2 ..... 5.325
Conshohocken,Pa. A3 .. 5.375
Dravosburg,Pa. U5 .... 5.325
Detroit M1 ..... 5.325
Ecorse,Mich. G5 ..... 5.425
Fairfield,Ala. T2 ..... 5.325
FairlessHills,Pa. U5 ... 5.375
Follansbee,W.Va. F4 .. 5.325
Fontana,Calif. K1 .... 6.425
Gary,Ind. U5 ..... 5.325
GraniteCity,Ill. G4 .... 5.525
Ind.Harbor,Ind. I-2, Y1 5.325
Lackawanna,N.Y. B2 .. 5.325
Mansfield,O. E6 ..... 5.325
Middletown,O. A10 .... 5.325
Newport,Ky. N9 ..... 5.325
Pittsburg,Calif. C11 .. 6.275
Pittsburgh J5 ..... 5.325
Portsmouth,O. P12 .... 5.325
SparrowsPoint,Md. B2.. 5.325
Steubenville,O. W10 ... 5.325
Warren,O. R2 ..... 5.325
Weirton,W.Va. W6 .... 5.325
Youngstown Y1 ..... 5.325

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ..... 7.875
Dravosburg,Pa. U5 .... 7.875
Ecorse,Mich. G5 ..... 7.975
FairlessHills,Pa. U5 ... 7.925
Fontana,Calif. K1 .. .8.975
Gary,Ind. U5 ..... 7.875
IndianaHarbor,Ind. Y1. 7.875
Lackawanna(37) B2 .. 7.875
Pittsburgh J5 ..... 7.875
SparrowsPoint(38) B2. 7.875
Warren,O. R2 ..... 7.875
Weirton,W.Va. W6 .... 7.875
Youngstown Y1 ..... 7.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 ..... 5.925
Middletown,O. A10 .... 5.825
Warren,O. R2 ..... 5.925

SHEETS, Culvert (16 Gage)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.90	...
Canton,O. R2	6.10	6.55
Dravosburg U5	6.10	...
Fairfield T2	6.10	...
Gary,Ind. U5	6.10	6.35
Ind.Harbor I-2	6.10	6.35
Kokomo,Ind. C16	6.20	...
MartinsFry. W10	6.10	...
Newport,Ky. N9	6.10	6.35
Pitts.,Calif. C11	6.85	...
SparrowsPt. B2	6.10	...

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 ..... 7.15
Gary,Ind. U5 ..... 6.35
MartinsFry,O. W10 .... 6.35

SHEETS, Galvanized Steel Hot-Dipped

Ala.City,Ala. R2 ..... 5.85‡
Ashland,Ky. A10 .... 5.85†
Canton,O. R2 ..... 5.85‡
Delphos,O. N16 ..... 6.60‡
Dover,O. R1 ..... 5.85‡
Dravosburg,Pa. U5 ... 5.85†
Fairfield,Ala. T2 ..... 5.85†
Gary,Ind. U5 ..... 5.85*
GraniteCity,Ill. G4 .... 6.05
Ind.Harbor,Ind. I-2 ... 5.85†
Kokomo,Ind. C16 ..... 5.95‡
MartinsFerry,O. W10 .. 5.85*
Middletown,O. A10 .... 5.85†
Newport,Ky. N9 ..... 5.85‡
Niles,O. N12 ..... 6.85‡
Pittsburg,Calif. C1 .... 6.60*
SparrowsPt.,Md., B2 .. 5.85†
Steubenville,O. W10 ... 5.85‡
Warren,O. R2 ..... 5.85†
Weirton,W.Va. W6 .... 5.85*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 .... 6.575

SHEETS, Galvanized High-Strength Low-Alloy

Dravosburg,Pa. U5 .... 8.60
SparrowsPoint(39) B2 .. 8.60

SHEETS, Galvannealed Steel

Canton,O. R2 ..... 6.25
Dravosburg,Pa. U5 .... 6.25
Kokomo,Ind. C16 ..... 6.60
Newport,Ky. N9 ..... 6.25
Niles,O. N12 ..... 7.25

SHEETS, Galvanized Ingot Iron (Hot-dipped Continuous)

Ashland,Ky. A10 ..... 6.10
Canton,O. R2 ..... 6.60
Middletown,O. A10 .... 6.10

SHEETS. Electrogalvanized

Cleveland(28) R2 ..... 6.70
Niles,O.(28) R2 ..... 6.70
Weirton,W.Va. W6 .... 6.55

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1). 8.50
Butler,Pa. A10 (type 2). 8.60

SHEETS, Enameling Iron

Ashland,Ky. A10 ..... 5.90
Cleveland R2 ..... 5.90
Dravosburg,Pa. U5 .... 5.90
Gary,Ind. U5 ..... 5.90
GraniteCity,Ill. G4 .... 6.10
Ind.Harbor,Ind. I-2 .... 5.90
Middletown,O. A10 .... 5.90
Niles,O. N12 ..... 5.90
Youngstown Y1 ..... 5.90

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ... 7.75
Ind.Harbor,Ind. I-2 .... 7.75
Yorkville,O. W10 ..... 7.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10 6.25
Gary,Ind. U5 ..... 6.25
Mansfield,O. E6 ..... 6.25
Middletown,O. A10 .... 6.25
Niles,O. N12 ..... 6.25
Weirton,W.Va. W6 ..... 6.25

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ..... 6.65

Key to Producers

Acme Steel Co.
Alan Wood Steel Co.
Allegheny Ludlum Steel
Alloy Metal Wire Co.
American Shim Steel Co.
American Steel & Wire
Anchor Drawn Steel Co.
Angell Nail & Chaplet
Armco Steel Corp.
Atlantic Steel Co.

Babcock & Wilcox Co.
Bethlehem Steel Co.
Beth. Pac. Coast Steel
Blair Strip Steel Co.
Bliss & Laughlin Inc.
Braeburn Alloy Steel
Brainard Steel Div.,
Sharon Steel Corp.
E. & G. Brooke, Wickwire Spencer Steel Div.
Colo. Fuel & Iron
Buffalo Bolt Co., Div.,
Buffalo-Eclipse Corp.
Buffalo Steel Corp.
A. M. Byers Co.
J. Bishop & Co.

Calstrip Steel Corp.
Calumet Steel Div.
Borg-Warner Corp.
Carpenter Steel Co.
Central Iron & Steel Div.
Barium Steel Corp.
Cleve. Cold Rolling Mills
Cold Metal Products Co.
Colonial Steel Co.
Colorado Fuel & Iron
Columbia-Geneva Steel
Columbia Steel & Shaft.
Columbia Tool Steel Co.
Compressed Steel Shaft.
Connors Steel Div.
H. K. Porter Co. Inc.
Continental Steel Corp.
Copperweld Steel Co.
Crucible Steel Co.
Cumberland Steel Co.

C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Northwest.SteelRoll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RellanceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Division, H. K. Porter Co. Inc.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..4.325
Allenport,Pa. P7 .....4.325
Alton,Ill. L1 .....4.50
Ashland,Ky.(8) A10 ..4.325
Atlanta A11 .....4.525
Bessemer,Ala. T2 ....4.325
Birmingham C15 .....4.325
Bridgeport,Conn. N19..4.625
Buffalo(27) R2 .....4.325
Conshohocken,Pa. A3 ..4.375
Detroit M1 .....4.425
Ecorse,Mich. G5 .....4.425
Fairfield,Ala. T2 ....4.325
Fontana,Calif. K1 ....5.075
Gary,Ind. U5 .....4.325
Ind.Harbor, Ind.I-2, Y1.4.325
Johnstown,Pa.(25) B2..4.325
Lackaw'na,N.Y.(24) B2 4.325
LosAngeles(25) B3 ....5.075
Milton,Pa. M18 .....4.325
Minnequa,Colo. C10 ..5.425
NewBritain(10) S15 ..4.325
N.Tonawanda,N.Y. B11 4.325
Pittsburg,Calif. C11 ..5.075
Portsmouth,O. P12 ....4.325
Riverdale,Ill. A1 .....4.325
SanFrancisco S7 .....5.05
Seattle(25) S3 .....5.325
Seattle N14 .....5.40
Sharon,Pa. S3 .....4.325
S.Chicago,Ill. W14 ...4.325
S.SanFrancisco(25) B3.5.075
SparrowsPoint,Md. B2..4.325
Sterling(1) N15 .....4.325
Sterling,Ill. N15 .....4.425
Torrance,Calif. C11 ..5.075
Warren,O. R2 .....4.325
Weirton,W.Va. W6 ....4.325
Youngstown U5 .....4.325

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19 ..7.50
Carnegie,Pa. S18 .....7.20
Fontana,Calif. K1 ....8.85
Gary,Ind. U5 .....7.20
Ind.Harbor,Ind. Y1 ....7.20
LosAngeles B3 .....8.40
Newport,Ky. N9 .....7.20
Sharon,Pa. S3 .....7.20
S.Chicago W14 .....7.20
Youngstown U5, Y1 ....7.20

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 ....6.425
Conshohocken,Pa. A3 ..6.425
Ecorse,Mich. G5 .....6.525
Fairfield,Ala. T2 ....6.425
Fontana,Calif. K1 ....7.525
Gary,Ind. U5 .....6.425
Houston S5 .....6.675
Ind.Harbor,Ind. I-2, Y1 6.425
KansasCity,Mo. S5 ....6.675
Lackawanna,N.Y. B2 ..6.425
LosAngeles(25) B3 ....7.175
Seattle(25) B3 .....7.425
Sharon,Pa. S3 .....6.425
S.SanFrancisco(25) B3.7.175
SparrowsPoint,Md. B2..6.425
Warren,O. R2 .....6.425
Weirton,W.Va. W6 ....6.425
Youngstown U5, Y1 ...6.425

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ..4.575
Warren,O. R2 .....4.925

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....6.25
Baltimore T6 .....6.25
Boston T6 .....6.80
Buffalo S40 .....6.25
Cleveland J5 .....6.25
Cleveland A7 .....6.25
Conshohocken,Pa. A3 ...6.30
Dearborn,Mich. D3 ....6.35
Detroit D2, M1, P20 ...6.35
Dover,O. G6 .....6.25
Ecorse,Mich. G5 .....6.35
Follansbee,W.Va. F4 ..6.25
Fontana,Calif. K1 ....8.00
FranklinPark,Ill. T6 ..6.35
Ind.Harbor,Ind. I-2 ...6.35
Ind.Harbor,Ind. Y1 ....6.25
Indianapolis C8 .....6.40
Lackawanna,N.Y. B2 ..6.25
LosAngeles C1 .....8.50
NewBedford,Mass. R10..6.70
NewBritain(10) S15 ...6.25
NewCastle,Pa. B4, E5..6.25
NewHaven,Conn. A7....7.00
NewHaven,Conn. D2....6.70
NewKensington,Pa. A6..6.25
Pawtucket,R.I. R3 ....6.90
Pawtucket,R.I. N8 ....6.80
Pittsburgh J5 .....6.25
Portsmouth,O. P12 ....6.25
Riverdale,Ill. A1 .....6.35
Rome,N.Y.(32) R6 ....6.25
Sharon,Pa. S3 .....6.25
SparrowsPt.,Md. B2 ....6.25
Trenton,N.J.(31) R5 ...7.80
Wallingford,Conn. W2 ..6.70
Warren,O. R2, T5 .....6.25
Weirton,W.Va. W6 ....6.25
Worcester,Mass. A7 ....7.10
Youngstown Y1 .....6.25
Youngstown C8 .....6.25

STRIP, Cold-Rolled Alloy

Boston T6 .....13.80
Carnegie,Pa. S18 .....13.45
Cleveland A7 .....13.45
Dover,O. G6 .....13.45
FranklinPark,Ill. T6 ...13.45
Harrison,N.J. C18 ....13.45
Indianapolis C8 .....13.60
Pawtucket,R.I. N8 ...13.80
Sharon,Pa. S3 .....13.45
Worcester,Mass. A7 ...13.75
Youngstown C8 .....13.45

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7 .....9.10
Dearborn,Mich. D3 ....9.20
Dover,O. G6 .....9.30
Ecorse,Mich. G5 .....9.20
Ind.Harbor,Ind. Y1 ....9.30
Lackawanna,N.Y. B2 ..9.10
Sharon,Pa. S3 .....9.10
SparrowsPoint,Md. B2 ..9.10
Warren,O. R2 .....9.10
Weirton,W.Va. W6 ....9.10
Youngstown Y1 .....9.30

STRIP, Electrogalvanized

Cleveland A7 .....6.25*
Dover,O. G6 .....6.25*
Riverdale,Ill. A1 .....6.55*
Youngstown C8 .....6.25*
Warren,O. T5 .....6.25*
Warren,O. B9 .....6.45*
Weirton,W.Va. W6 ....5.75*
Worcester,Mass. A7 ...7.10*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3 .....6.55

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.05
Riverdale,Ill. A1 .....4.90
Sharon,Pa. S3 .....4.75
Youngstown U5 .....4.75

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	7.30	9.25	10.80	12.95	15.65
Boston T6	7.55	9.25	10.80	12.95	15.65
Bristol,Conn. W1	...	...	10.80	12.95	....
Carnegie,Pa. S18	...	8.95	10.50	12.65	....
Cleveland A7	7.00	8.95	10.50	12.65	15.35
Cleveland C7	...	8.95	10.50	12.65	15.35
Dearborn,Mich. D3	7.10	9.05	10.60	....	....
Detroit D2	7.10	9.05	10.60	12.75	....
Dover,O. G6	7.00	8.95	10.50	12.65	15.35
Follansbee,W.Va. F4	7.00	8.95	10.50**	....	....
FranklinPark,Ill. T6	7.10	8.95	10.50	12.65	15.35
Harrison,N.J. C18	...	...	10.80	12.95	15.65
Indianapolis C8	7.15	9.10	10.50	12.65	15.35
NewBritain,Conn.(10) S15.	7.00	8.95	10.50	12.65	15.35
NewCastle,Pa. B4, E5	7.00	8.95	10.50	12.65	....
NewHaven,Conn. D2	7.45	9.25	10.80	12.95	....
NewKensington,Pa. A6	7.00	8.95	10.50	....	....
New York W3	...	9.25	10.80	12.95	15.65
Pawtucket,R.I. N8	7.55	9.25	10.80	12.95	15.35
Riverdale,Ill. A1	7.10	8.95	10.50	12.65	15.35
Rome,N.Y.(32) R6	7.00	8.95	10.50	12.65	15.35
Sharon,Pa. S3	7.00	8.95	10.50	12.65	15.35
Trenton,N.J. R5	...	9.25	10.80	12.95	15.65
Wallingford,Conn. W2	7.45	9.25	10.80	12.95	15.65
Warren,O. T5	7.00	8.95	10.50	12.65	15.35
Weirton,W.Va. W6	7.00	8.95	10.50	12.65	15.35
Worcester,Mass. T6	7.55	9.25	10.80	12.95	15.65
Worcester,Mass. A7	7.85	9.25	10.80	12.95	15.65
Youngstown C8	7.00	8.95	10.50	12.65	15.35
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	14.40	17.60	....
Buffalo W12	...	...	14.40	....	....
FranklinPark,Ill. T6	...	...	14.90	18.10	21.50
Harrison,N.J. C18	...	...	14.40	17.60	21.00
NewYork W3	...	...	14.40	17.60	21.00
Trenton,N.J. R5	...	...	14.40	17.60	21.00
Worcester,Mass. A7, T6	...	...	14.40	17.60	21.00
Worcester,Mass. W12	...	...	14.40	....	....
Youngstown C8	...	...	14.75	17.95	21.35

**0.065 C, max.

SILICON STEEL

H.R. SHEETS(22 Ga.,cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10 ..	...	...	9.95	10.95	11.85
Brackenridge,Pa. A4	...	...	9.95	10.95	11.85
Mansfield,O. E6	8.40	9.35	9.95	10.95	11.85
Newport,Ky. N9	8.40	9.35	9.95	10.95	11.85
Niles,O. N12	8.40	9.35	9.95	10.95	....
Vandergrift,Pa. U5	...	9.35	9.95	10.95	11.85
Warren,O. R2	8.40	9.35	9.95	10.95	11.85
Zanesville,O. A10	...	9.35	9.95	10.95	11.85

C.R. COILS & CUT LENGTHS, (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	...	...	10.70	11.70	12.60
GraniteCity,Ill. G4	8.80*	9.80*	10.40*	11.40*	....
IndianaHarbor,Ind. I-2 ..	8.60†	9.60*	10.20*	11.20*	....
Vandergrift,Pa. U5	...	10.10†	10.70†	11.70†	12.60†
Vandergrift,Pa. U5	8.60*	9.60*	10.20*	11.20*	12.10*
Warren,O. R2	8.60†	10.10	10.70	11.70	12.60
Zanesville,O. A10	...	10.10	10.70	11.70	12.60

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	12.80	13.35	13.85	14.85
Brackenridge,Pa. A4	12.80	....	....	....
Newport,Ky. N9	12.80	....	....	....
Vandergrift,Pa. U5	12.80	13.35	13.85	14.85
Zanesville,O. A10	12.80§	13.35§	13.85§	14.85§

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.85	17.45	17.95	13.55§
Butler,Pa. A10	....	....	17.45	17.95	....
Vandergrift,Pa. U5	14.85	15.85	17.45	17.95	13.55
Warren,O. R2	....	....	....	....	13.55†

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. §Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.7
Aliquippa,Pa. J5	$7.90	$8.15	$
Dravosburg,Pa. U5	7.90	8.15	
Fairfield,Ala. T2	8.00	8.25	
FairlessHills,Pa. U5	8.00	8.25	
Gary,Ind. U5	7.90	8.15	
GraniteCity,Ill. G4	8.00	8.25	
IndianaHarbor,Ind. I-2, Y1	7.90	8.15	
Niles,O. R2	7.90	8.15	
Pittsburg,Calif. C11	8.65	8.90	
SparrowsPoint,Md. B2	8.00	8.25	
Weirton,W.Va. W6	7.90	8.15	
Yorkville,O. W10	7.90	8.15	

ELECTROTIN (22-27 Gage; Dollars per 100 lb)		
Aliquippa,Pa. J5	6.575	....
Niles,O. R2	7.075	7.275

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$9.20	$9.45
Dravosburg,Pa. U5	9.20	9.45
Fairfield,Ala. T2	9.30	9.55
Fairless,Pa. U5	9.30	9.55
Gary,Ind. U5	9.20	9.45
Ind.Har. I-2, Y1	9.20	9.45
Pitts.,Calif. C11	9.95	10.20
Sp.Pt.,Md. B2	9.30	9.55
Warren,O. R2	9.20	9.45
Weirton,W.Va. W6	9.20	9.45
Yorkville,O. W10	9.20	9.45

BLACK PLATE, (Base Box)

Aliquippa,Pa. J5 .....$7.00
Dravosburg,Pa. U5 ....7.00
Fairfield,Ala. T2 .....7.10
FairlessHills,Pa. U5 ...7.10
Gary,Ind. U5 .....7.00
GraniteCity,Ill. G4 ....7.10
Ind.Harbor,Ind. I-2, Y1 7.00
Niles,O. R2 .....7.00
Pittsburg,Calif. C11 ...7.75
SparrowsPoint,Md. B2 ..
Warren,O. R2 .....
Weirton,W.Va. W6 ....
Yorkville,O. W10 .....

HOLLOWARE ENAMELING Black Plate (29 Gage)

Dravosburg,Pa. U5 ...
Gary,Ind. U5 .....
GraniteCity,Ill. G4 ....
Ind.Harbor,Ind. Y1 ....
Yorkville,O. W10 .....

MANUFACTURING TERNES (Special Coated; Base B

Dravosburg,Pa. U5 ..$
Gary,Ind. U5 .....

MANUFACTURING TERNES (Light Coated, 6 lb; Base

Yorkville,O. W10 .....$

ROOFING SHORT TERNES (8 lb Coated; Base Box)

Gary,Ind. U5 .....$

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..6.25
Aliquippa,Pa. J5 .....6.25
Alton Ill. L1 .....6.425
Atlanta A11 .....6.45
Bartonville,Ill. K4 ....6.35
Buffalo W12 .....6.25
Chicago W13 .....6.25
Cleveland A7 .....6.25
Crawfordsville,Ind. M8..6.35
Donora,Pa. A7 .....6.25
Duluth Minn. A7 .....6.25
Fairfield,Ala. T2 .....6.25
Fostoria,O.(24) S1 ....6.45
Houston S5 .....6.50
Jacksonville,Fla. M8 ..6.77
Johnstown,Pa. B2 .....6.25
Joliet,Ill. A7 .....6.25
KansasCity,Mo. S5 ....6.50
Kokomo,Ind. C16 .....6.35
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.50
Monessen,Pa. P7 .....6.25
Newark 6-8 ga. I-1 ....6.90
N.Tonawanda B11 ....6.25
Palmer,Mass. W12 ....6.55
Pittsburg Calif. C11 ...7.20
Portsmouth,O. P12 ....6.25
Rankin,Pa. A7 .....6.25
S.Chicago,Ill. R2 .....6.25
S SanFrancisco C10 ....7.20
SparrowsPoint,Md. B2 ..6.35
Sterling,Ill.(1) N15 ....6.25
Sterling,Ill. N15 .....6.35
Struthers,O. Y1 .....6.25
Waukegan Ill. A7 .....6.25
Worcester,Mass. A7 ....6.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 .....7.90
Alton,Ill. L1 .....8.075
Bartonville Ill. K4 .....8.00
Buffalo W12 .....7.90
Cleveland A7 .....7.90
Donora,Pa. A7 .....7.90
Duluth,Minn. A7 .....7.90
Fostoria,O. S1 .....7.95
Johnstown,Pa. B2 .....7.90
LosAngeles B3 .....8.85
Milbury,Mass.(12) N6 ..8.20
Minnequa,Colo. C10 ....8.15
Monessen,Pa. P16 .....7.90
Muncie,Ind. I-7 .....8.10
Palmer,Mass. W12 .....8.20
Pittsburg,Calif. C11 ...8.85
Portsmouth,O. P12 .....7.90
Roebling,N.J. R5 .....8.20
S.Chicago,Ill. R2 .....7.90
S.SanFrancisco C10 ....8.85
SparrowsPt.,Md. B2 ...8.00
Struthers,O. Y1 .....7.90
Trenton,N.J. A7 .....8.20
Waukegan,Ill. A7 .....7.90
Worcester A7,J4,T6,W12.8.20

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....7.60
Alton,Ill. L1 .....
Buffalo W12 .....
Cleveland A7 .....
Donora,Pa. A7 .....
Duluth,Minn. A7 .....
Jonnstown,Pa. B2 .....
KansasCity,Mo. S5 ....
LosAngeles B3 .....
Minnequa Colo. C10 ...
Monessen,Pa. P16 .....
NewHaven,Conn. A7 ...
Palmer,Mass. W12 .....
Pittsburg Calif. C11 ...
Portsmouth,O. P12 .....
Roebling,N.J. R5 .....
S.Chicago,Ill. R2 .....
S.SanFrancisco C10 ....
SparrowsPoint,Md. B2 ..
Struthers,O. Y1 .....
Trenton,N.J. A7 .....
Waukegan,Ill. A7 .....
Worcester,Mass. A7 ...

WIRE, Fine & Weaving(8" C

Alton,Ill. L1 .....
Bartonville,Ill. K4 .....
Buffalo W12 .....
Chicago W13 .....
Cleveland A7 .....
Crawfordsville,Ind. M8..
Fostoria,O. S1 .....
Jacksonville,Fla. M8 ...
Johnstown,Pa. B2 .....
Kokomo,Ind. C16 .....
Minnequa,Colo. C10 ....
Monessen,Pa. P16 .....
Muncie,Ind. I-7 .....
Palmer,Mass. W12 .....
Roebling N.J. R5 .....
S.SanFrancisco C10 ....
Waukegan,Ill. A7 .....
Worcester,Mass.A7,T6 ..

WIRE, Gal'd ACSR for Co

Bartonville,Ill. K4 .....
Bualo W12 .....
Johnstown,Pa. B2 .....
Minnequa,Colo. C10 ...
Monessen,Pa. P16 .....
Muncie,Ind. I-7 .....
Pittsburg,Calif. C11 ...
Portsmouth,O. P12 .....
Roebling,N.J. R5 .....
SparrowsPt.,Md. B2 ....

ROPE WIRE

Bartonville,Ill. K4 .....
Buffalo W12 .....
Fostoria,O.(23) S1 .....
Johnstown,Pa. B2 .....
Monessen,Pa. P16 .....
Muncie,Ind. I-7 .....
Palmer,Mass. W12 .....
Portsmouth,O. P12 .....
Roebling,N.J. R5 .....
SparrowsPt. B2 .....
Struthers,O. Y1 .....
Worcester,Mass. J4 ....

(A) Plow and Mild Plow add 0.25c for Improved I

WIRE
(Continued)

, Tire Bead

nville,Ill. K4	....14.15
ssen,Pa. P16	....14.20
ling,N.J. R5	....14.35

, Cold-Rolled Flat

rson,Ind. G6	.....9.00
more T6	.....9.30
lo W12	.....9.00
land A7	.....9.00
fordsville,Ind. M8	..9.00
.O. G6	.....9.00
ria,O. S1	.....9.00
klinPark,Ill. T6	...9.10
mo.Ind. C16	.....9.00
illon,O. R8	.....9.00
aukee C23	.....9.20
ssen,Pa. P16	.....9.00
ucket,R.I. N8	....9.30
dale,Ill. A1	.....9.10
.N.Y. R6	.....9.00
on,N.J. R5	.....9.30
ester A7, T6, W12	9.30

Stock
Dealers & Mfrs. (7) Col.

maCity,Ala. R2	...152
ippa,Pa. J5	152
ta A11	154
nville,Ill. K4	154
go,Ill. W13	152
land A9	157
fordsville,Ind. M8	.154
ra,Pa. A7	152
h Minn. A7	152
leld,Ala. T2	152
ston,Tex. D7	157
ton.Tex. S5	157
ttown,Pa. B2	152
Ill. A7	152
asCity,Mo. S5	157
mo,Ind. C16	154
equa.Colo. C10	157
ssen,Pa. P7	152
burg,Calif. C11	171
ir,Pa. A7	152
cago Ill. R2	152
rowsPt.,Md. B2	154
ng,Ill.(1) N15	152
ester,Mass. A7	158

, CUT (100 lb keg)
Dealers (33)

hohocken,Pa. A3	..$9.05
ling,W.Va. W10	...9.05

.ES, Polished Stock
Dealers & Mfrs. (7) Col.

ippa,Pa. J5	152
ta A11	154
nville,Ill. K4	154
fordsville,Ind. M8	.154
ra,Pa. A7	152
th.Minn. A7	152
leld,Ala. T2	152
stown,Pa. B2	152
Ill. A7	152
mo,Ind. C16	154
equa.Colo. C10	157
ssen,Pa. P7	152
burg,Calif. C11	171
tin,Pa. A2	152
rowsPt.,Md. B2	154
ing,Ill.(1) N15	152
ester,Mass. A7	158

WIRE, Automatic Baler
Ga.) (Per 97 lb Net Box)

Coil No. 3150

amaCity,Ala. R2	..$9.35
onville,Ill. K4	.....9.45
lo W12	.....9.35
fordsville,Ind. M8	..9.46
ra,Pa. A7	.....9.35
th.Minn. A7	.....9.35
stown,Pa. B2	.....9.35
t.Ill. A7	.....9.35
mo,Ind. C16	.....9.45
ngeles B3	.....10.14
equa,Colo. C10	....9.60
burg,Calif. C11	...10.43
icago,Ill. R2	.....9.35
rowsPt.,Md. B2	....9.45
ling,Ill. N15	.....9.35

Coil No. 6500 Stand.

amaCity,Ala. R2	..$9.65
onville,Ill. K4	.....9.75
lo W12	.....9.60
fordsville,Ind. M8	..9.75
ora,Pa. A7	.....9.65
th,Minn. A7	.....9.65
stown,Pa. B3	.....9.65
t.Ill. A7	.....9.65
omo,Ind. C16	.....9.75
ngeles B3	.....10.45
equa,Colo. C10	....9.90
burg,Calif. C11	...10.13
icago,Ill. R2	.....9.65
rowsPt.,Md. B2	....9.75
ling,Ill. N15	.....9.65

Coil No. 6500 Interim

amaCity,Ala. R2	..$9.70
onville,Ill. K4	.....9.80
lo W12	.....9.70
Crawfordsville,Ind. M8	..9.80
Donora,Pa. A7	.....9.70
Duluth,Minn. A7	.....9.70
Johnstown,Pa. B2	.....9.70
Joliet,Ill. A7	.....9.70
Kokomo,Ind. C16	.....9.80
LosAngeles B3	.....10.50
Minnequa,Colo. C10	....9.95
Pittsburg,Calif. C11	...10.50
S.Chicago,Ill. R2	.....9.70
SparrowsPt.,Md. B2	...9.80
Sterling,Ill. N15	.....9.70

WIRE, Barbed — **Col.**

AlabamaCity,Ala. R2,	.175**
Aliquippa J5	.....172§
Atlanta A11	181
Bartonville,Ill. K4	181
Crawfordsville,Ind. M8	..181
Donora,Pa. A7	.....175†
Duluth,Minn. A7	.....175†
Fairfield,Ala. T2	.....175†
Houston Tex. S5	.....180†
Johnstown,Pa. B2	....179*
Joliet,Ill. A7	.....175†
KansasCity,Mo. S5	....180†
Kokomo,Ind. C16	.....177†
Minnequa,Colo. C10	...180**
Monessen,Pa. P7	.....179*
Pittsburg,Calif. C11	...195†
Rankin,Pa. A7	.....175†
S.Chicago,Ill. R2	....175**
S.SanFrancisco C10	...195**
SparrowsPoint,Md. B2	..181*
Sterling,Ill.(1) N15	....179*

WOVEN Fence, 9-15 Ga. Col.

Ala.City,Ala. R2	.....162**
Ala.City, 17 ga. R2	...241**
Ala.City, 18 ga. R2	...251**
Aliq'ppa,Pa.9-14½ga J5	165§
Atlanta A11	168
Bartonville,Ill. K4	168
Crawfordsville,Ind. M8	..168
Donora,Pa. A7	.....162†
Duluth Minn. A7	.....162†
Fairfield,Ala. T2	.....162†
Houston,Tex. S5	.....167†
Johnstown,Pa.(43) B2	..166
Joliet,Ill. A7	.....162†
KansasCity.Mo. S5	....167†
Kokomo,Ind. C16	.....164†
Minnequa,Colo. C10	...167**
Monessen.Pa. 9 ga. P17	.166*
Pittsburg,Calif. C11	...185†
Rankin,Pa. A7	.....162†
S.Chicago,Ill. R2	.....162**
Sterling,Ill.(1) N15	....166*

WIRE (16 Gage) — **An'ld Galv. Stone** — **Galv. Stone**

Ala.City R2	14.50	16.05**
Bartonville K4	14.60	16.50
Buffalo W12	14.50	....
Cleveland A7	14.50	....
Crawf'dsville M8	14.60	16.50
Fostoria,O. S1	14.60	16.15†
Johnstown B2	14.15	16.40*
Kokomo C16	14.60	16.15†
Minnequa C10	14.75	16.45**
Palmer,MassW12	14.50	16.05*
Pitts.,Calif. C11	14.85	16.40†
S.Chicago R2	14.50	16.05**
SparrowsPt.	B2 14.60	16.50*
Sterling(1) N15	14.50	16.45††
Waukegan A7	14.50	16.05†
Worcester A7	14.80	....

WIRE, Merchant Quality
(6 to 8 gage) An'ld Galv.

Ala.City,Ala.	R2 7.40	7.80**
Aliquippa J5	7.40	7.925§
Atlanta A11	7.50	8.075
Bartonville(48)	K4 7.50	8.075
Buffalo W12	7.40	8.80†
Cleveland A7	7.40	....
Crawfordsville	M8 7.50	8.075
Donora,Pa. A7	7.40	7.80†
Duluth,Minn. A7	7.40	7.80†
Fairfield T2	7.40	7.80†
Houston,Tex. S5	7.65	8.05†
Jacks'ville,Fla.M8	7.90	8.475
Johnstown B2(48)	7.40	7.975*
Joliet,Ill. A7	7.40	7.80†
KansasCity,Mo. S5	7.65	8.05†
Kokomo C16	7.50	7.90†
LosAngeles B3	8.35	8.925*
Minnequa C10	7.65	8.05**
Monessen P7 (48)	7.40	7.975*
Palmer,Mass.	W12 7.70	8.10†
Pitts.,Calif. C11	8.35	8.75†
Portsmouth,O.	P12 7.40	....
Rankin A7	7.40	7.80†
S.Chicago R2	7.40	7.80**
S.SanFran. C10	8.35	8.75**
Spar'wsPt.B2(48)	7.50	8.075*
Str'ling(1)(48)	N15 7.40	8.00††
Struthers,O.(48)	Y1 7.40	7.90‡
Worcester,Mass.	A7 7.70	....

*Based on 12.50c zinc; †5c zinc; §10c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras. ††13c zinc.

FENCE POSTS

	Col.
ChicagoHts.,Ill.	C2, I-2..157
Duluth,Minn.	A7 157
Franklin,Pa.	F5 157
Huntington,W.Va.	W7 ..157
Johnstown,Pa.	B2 160
Marion,O.	P11 157
Minnequa,Colo.	C10 162
Moline,Ill.	R2 162
S.Chicago,Ill.	R2 157
Tonawanda,N.Y.	B12 ..157
Williamsport,Pa.	S10 160

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(Base discounts, less case lots, per cent off list, f.o.b. midwestern plants)

4" and shorter:
½" & smaller diam... +5
Over 4" through 6":
½" and smaller diam. +12
6" and shorter:
⅜" and ⅝" .....+13
¾" and larger .....+16
Longer than 6":
All diameters .....+25
Lag bolts, all diams:
6" and shorter ..... +2
Over 6" long .....+11
Ribbed Necked Carriage. +13
Blank 2
Plow 18
Step, Elevator, Tap and Sleigh Shoe 2
Tire Bolts 12
Boiler & Fitting-Up Bolts 14

NUTS

H.P. and C.P., regular & heavy:
Square, all sizes 51
H.P., Hex. regular & heavy:
¾" and smaller 55
⅞" to 1⅛", inclusive. 55
1¼" to 1½", inclusive 57
1⅝" and larger 51
C.P. Hex regular & heavy:
¾" and smaller 55
Larger than ¾" 51
Hot Galv. Nuts (all types):
¾" or smaller 38
⅞" to 1½", inclusive. 36
Finished Hex Nuts:
¾" and smaller 55
⅞" and larger 51
Semifinished & Slotted Hex:
Regular and heavy,
¾" and smaller ... 55
⅞" and larger 51

STEEL STOVE BOLTS
(F.o.b. plant, per cent off list in packages; plain finish)

3" and shorter:
⅛" thru ¼" diam, 25,000 to 200,000 pieces 61
Over 200,000 pieces. 64
5/16" thru ½" diam: 15,000 to 100,000 pieces 61
100,000 or more ... 64
Longer than 3", any diam: 5000 to 100,000 pieces 61
Over 100,000 pieces. 64

SQUARE HEAD SET SCREWS
(1035 steel; packaged; per cent off list)
1" diam x 6" and shorter 19
1" and smaller diam x over 6" ..... List

HEXAGON CAP SCREWS
(1020 steel; packaged; per cent off list)
6" or shorter:
¼" through ½" 34
⅜" & ⅝" & shorter.. 31
¾", ⅞" through 1 in. 8

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.06	20.41
1¼	13	....	24.94	20.44
1½	13	23.31	27.57	22.60
1¾	13	27.54	32.57	26.71
2	13	30.87	36.51	29.93
2¼	13	34.77	41.12	33.72
2¼	12	37.73	44.63	36.59
2½	12	41.57	49.16	40.31
2¾	12	45.00	53.22	43.65
3	12	47.99	56.76	46.54

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	4.725	4.625	4.675	5.65
Ensley,Ala. T2	4.725	4.625	...	5.65
Fairfield,Ala. T2	...	...	...	5.65
Gary,Ind. U5	4.725	...	...	...
Huntington,W.Va. W7	...	...	...	5.65
IndianaHarbor,Ind. I-2	4.725	4.625	4.675	...
Johnstown,Pa. B2	...	...	...(16)	5.65
Lackawanna,N.Y. B2	4.725	4.625	...	5.65
Minnequa,Colo. C10	4.725	4.625	...	6.15
Steelton,Pa. B2	4.725	4.625	...	...
Williamsport,Pa. S19	...	...	...	5.65

TIE PLATES

Fairfield,Ala. T2	.....5.625
Gary,Ind. U5	.....5.625
Ind.Harbor,Ind. I-2	...5.625
Lackawanna,N.Y. B2	..5.625
Minnequa,Colo. C10	...5.625
Seattle B3	.....5.775
Steelton,Pa. B2	.....5.625
Torrance,Calif. C11	...5.775

TRACK BOLTS (20) Treated

Cleveland R2	.....12.40
KansasCity,Mo. S5	....12.40
Lebanon,Pa. B2	.....12.40
Minnequa,Colo. C10	...12.40
Pittsburgh O3, P14	....12.40
Seattle B3	.....12.90

AXLES

Ind.Harbor,Ind. S13	....7.25
Johnstown,Pa. B2	.....7.25

JOINT BARS

Bessemer,Pa. U5	.....5.825
Fairfield,Ala. T2	.....5.825
Ind.Harbor,Ind. I-2	...5.825
Joliet,Ill. U5	.....5.825
Lackawanna,N.Y. B2	..5.825
Minnequa,Colo. C10	...5.825
Steelton,Pa. B2	.....5.825

SCREW SPIKES

Cleveland R2	.....11.90
Pittsburgh O3	.....11.90

STANDARD TRACK SPIKES

Fairfield,Ala. T2	.....7.90
Ind.Harbor,Ind. I-2, Y1	7.90
KansasCity,Mo. S5	....7.90
Lebanon,Pa. B2	.....7.90
Minnequa,Colo. C10	....7.90
Pittsburgh J5	.....7.90
Seattle B3	.....8.40
S.Chicago,Ill. R2	.....7.90
Struthers,O. Y1	.....7.90
Youngstown R2	.....7.90

METAL POWDER

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron: Cents
98+% Fe, annealed. 15.25
Unannealed:
Minus 100 mesh 11.75
Minus 35 mesh 9.25
Minus 20 mesh 9.00
Swedish, c.i.f. Camden, N. J., c.l. in bags. 9.50
Domestic (Swedish), f.o.b. Riverton, N.J., in bags 9.50
Canadian, f.o.b. shipping point 9.50
Electrolytic iron:
Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in. 22.00
Annealed, 99.5% Fe. 36.50
Unannealed (99+% Fe) 32.50
Unannealed (99+% Fe) (minus 325 mesh) 52.00
Powder Flakes (minus 16, plus 100 mesh).. 31.00
Carbonyl Iron:
97.9-99.8% size 5 to 10 microns..83.00-148.00
Aluminum:
Atomized, 500 lb drum, frght. allowed
Carlots 34.50
Ton lots 36.50
Antimony, 500 lb lots 32.00*
Brass, 5000-lb lots .....38.00-50.00†
Bronze, 5000-lb lots .....61.50-64.75†
Copper:
Electrolytic 13.75*
Reduced 13.75*
Lead 7.50*
Manganese:
Minus 35 mesh 61.00
Minus 100 mesh 67.00
Minus 200 mesh 72.00
Nickel, unannealed ... 94.00
Nickel-Silver, 5000-lb lots ..... 58.75-62.75†
Phosphor-Bronze, ¼-ton lots 58.50
Silicon 43.50
Solder 7.00*
Stainless Steel, 302... 94.00
Stainless Steel, 316... $1.25
Tin 14.50*
Zinc, 5000-lb lots 18.75-32.50‡
Tungsten Dollars
Melting grade, 99% 60 to 200 mesh:
1000 lb and over... 4.50
Less than 1000 lb.. 4.65
Chromium, electrolytic 99.2% Cr min. 3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago Base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 Ga. and heavier.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Deld San Francisco Bay area.
(23) Mild plow, 10.55c.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Delivered in mill zone, 5.10c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.45c H.S.-L.A.
(31) Widths over ⅝-in.; 6.90c for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 Ga. & heavier; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.25c.
(43) 9-14½ Ga.
(48) 6-7 Ga.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2	2½	3	3½	4	5	6
List Per Ft	37c	58.5c	76.5c	92c	$1.09	$1.48	$1.92
Pounds Per Ft.	3.68	5.82	7.62	9.20	10.89	14.81	19.18

	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	G
Aliquippa, Pa. J5	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+
Ambridge, Pa. N2	6.5	..	10.5	...	13	...	14.5	...	14.5	...	14	...	16.5	
Lorain, O. N3	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+
Youngstown Y1	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	

	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	G
Aliquippa, Pa. J5	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	
Alton, Ill. L1	...	...	....	....	....	....	15.5	+1.75	18.5	2.25	21	5.75	23.5	
Benwood, W. Va. W10	16.5	+12	7.25	+18.25	+1.75	+26.25	17.5	0.25	20.5	4.75	23	7.75	25.5	
Butler, Pa. F6	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	
Etna, Pa. N2	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	
Fairless Hills, Pa. N3	...	...	....	....	....	....	15.5	+1.75	18.5	2.75	21	5.75	23.5	
Fontana, Calif. K1	...	...	....	....	....	....	6	+11.25	9	+7.25	11.5	+3.75	14	+
Ind. Harbor, Ind. Y1	...	...	....	....	....	....	16.5	+0.75	19.5	3.25	22	6.75	24.5	
Lorain, O. N3	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	
Sharon, Pa. S4	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	
Sharon, Pa. M6	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	
Sparrows Pt., Md. B2	15.5	+13	7	+18.5	+1.5	+26	15.5	+1.75	18.5	2.25	21	5.75	23.5	
Youngstown R2, Y1	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	
Wheatland, Pa. W9	17.5	+11	9	+16.5	0.5	+24	17.5	0.25	20.5	4.25	23	7.75	25.5	

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	

	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	G
Aliquippa, Pa. J5	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	
Alton, Ill. L1	24	8	24.5	8.5	26	8.75	26	8.75	....	...	....	
Benwood, W. Va. W10	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	
Etna, Pa. N2	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	
Fairless Hills, Pa. N3	24	8	24.5	8.5	26	8.75	26	8.75	16.5	+1.25	16.5	+
Fontana, Calif. K1	14.5	+1.5	15	+1	16.5	+0.75	16.5	+0.75	7	+10.75	7	+
Ind. Harbor, Ind. Y1	25	9	25.5	9.5	27	9.75	27	9.75	17.5	+0.25	17.5	+
Lorain, O. N3	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	
Sharon, Pa. M6	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	
Sparrows Pt., Md. B2	24	8	24.5	8.5	26	8.75	26	8.75	16.5	+1.25	16.5	+
Youngstown R2, Y1	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	
Wheatland, Pa. W9	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	

*Galvanized pipe discounts based on current price of zinc (13.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
201	17.00	21.50	....	....	31.00	....	....	42.25	39.00
202	18.25	24.00	31.00	36.25	33.50	36.75	38.75	42.50	42.50
301	17 75	22.25	....	36.75	32.00	38.00	....	44.25	41.00
302	19.00	24.75	32.00	37.25	34.50	38.25	40.25	44.50	44.50
302B	20.25	26.50	33.00	37.25	37.75	38.25	40.25	47.00	47.00
303	....	26.75	34.75	40.00	...	41.00	....	....	....
304	20.25	26.00	33.75	39.00	37.25	40.25	43.00	47.25	47.25
304L	....	....	38.75	44.00	42.25	45.25	48.00	52.25	52.25
305	21.75	28.25	....	39.50	40.25	40.25	43.50	50.25	50.25
308	22.00	29.00	38.50	44.25	41.25	45.50	49.75	52.00	52.00
309	29.50	38.25	46.75	53.50	53.50	54.75	58.25	67.00	67.00
309S	31.50	41.00	51.00	59.00	58.50	60.25	63.75	74.00	74.00
310	37.25	48.00	62.25	72.25	68.50	73.50	75.25	78.75	78.75
314	....	....	....	....	....	....	75.25	....	....
316	31.50	40.25	51.25	59.50	58.25	60.75	64.00	68.25	68.25
316L	....	....	56.25	64.75	63.25	65.75	69.25	73.25	73.25
317	37.25	48.25	62.75	72.75	73.50	74.50	77.00	83.75	83.75
321	25.00	32.00	38.25	44.00	44.25	45.25	49.25	54.25	54.25
18-8CbTa	29.25	38.00	45.75	52.25	53.25	53.50	58.00	66.50	66.50
403	....	....	28.75	32.75	....	34.00	36.25	....	44.00
405	17.50	23.00	26.75	31.00	32.25	32.00	33.75	42.25	42.25
410	15.00	19.50	25.50	29.50	28.00	30.50	31.75	36.25	36.25
416	....	....	26.00	30.00	....	31.00	....	....	....
420	23.50	30.25	31.00	36.00	37.75	37.25	40.75	56.00	56.00
430	15.25	19.75	26.00	30.00	28.75	31.00	32.25	36.75	36.75
430F	....	....	26.50	30.50	....	31.50	....	....	....
431	16.00	20.50	26.50	30.50	29.75	31.50	33.00	38.00	38.00
446	....	....	35.50	40.50	53.25	42.00	43.25	63.25	63.25

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Tube Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co., Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Shee Carbon 20%
Stainless:			
302	....	....	30.0
304	30.30	36.05	32.0
304-L	32.30	37.95	..
310	41.30	47.00	..
316	35.50	41.40	47.
316-L	40.00	46.10	..
316-CB	41.15	48.45	..
321	32.00	37.75	37.
347	34.40	41.40	48.
405	25.80	33.35	..
410	25.30	32.85	..
430	25.30	32.85	..
Inconel	49.45	65.45	..
Nickel	41.05	55.85	..
Nickel, Low Carbon	43.25	60.05	..
Monel	42.35	56.35	..
Copper*	....	....	46.

	Strip, Carbon Base, Cold Rolled 10%	Strip, Carbon Base, Cold Rolled Both
Copper*	30.00	38.

*Deoxidized. Production points: Stainless-clad sh New Castle, Ind. I-4; stainless-clad plates, Claymont, C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Y ington, Pa. J3; nickel, inconel, monel-clad plates, C ville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$
Regular carbon	0.275	5%Cr Hot Work	0.430-
Extra Carbon	0.330	W-Cr Hot Work	
Special Carbon	0.390	V-Cr Hot Work	
Oil Hardening	0.430	Hi-Carbon-Cr	

Grade by Analysis (%)

W	Cr	V	Co	Mo	$
20.25	4.25	1.6	12.25	...	
18.25	4.25	1	4.75	...	2.305-
18	4	2	9	...	2.675-2
18	4	2	....	...	
18	4	1	....	...	
13.75	3.75	2	5	...	
13.5	4	3	....	...	
9	3.5	..	....	...	
6	4	2	....	5	
6	4	3	....	6	
1.5	4	1	....	8.5	

Tool steel producers include: A4, A8, B2, B8, C4 C13, C18, D4, F2, J3, M14, S8, U4, V2 and V3.

g Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
ningham District				
bamaCity,Ala. R2	54.50	55.00‡	....	....
ningham R2	54.50	55.00‡	....	....
ningham U6	....	55.00‡	59.00	....
dward,Ala. W15	54.50	55.00‡	59.00	....
incinnati, deld.	....	62.70	....	....
falo District				
falo H1, R2	58.50	59.00	59.50	60.00
awanda,N.Y. W12	58.50	59.00	59.50	60.00
onawanda,N.Y. T9	....	59.00	59.50	60.00
oston, deld.	69.15	69.65	70.15	....
ochester,N.Y. deld.	61.52	62.02	62.52	....
yracuse,N.Y. deld.	62.62	63.12	63.62	....
cago District				
cago I-3	58.50	59.00	59.00	59.50
y,Ind. U5	58.50	....	59.00	....
icago R2	58.50	....	59.00	....
icago,Ill. Y1	58.50	59.00	59.00	59.50
icago,Ill. U5, W14	58.50	....	59.00	59.50
ilwaukee, deld.	60.67	61.17	61.17	61.67
uskegon,Mich. deld.	....	65.30	65.30	....
eland District				
eland A7, R2	58.50	59.00	59.00	59.50
kron,O., deld.	61.25	61.75	61.75	62.25
ain,O. N3	58.50	....	....	59.50
-Atlantic District				
hlehem,Pa. B2	60.50	61.00	61.50	62.00
ewYork, deld.	....	64.78	65.28	....
ewark, deld.	63.52	64.02	64.52	65.02
lsboro,Pa. B10	60.50	61.00	61.50	62.00
ster,Pa. C31	54.50	55.00	55.50	....
hiladelphia, deld.	56.16	56.66	57.16	....
lton,Pa. B2	60.50	61.00	61.50	62.00
deland,Pa. A3	60.50	61.00	61.50	62.00
hiladelphia, deld.	62.16	62.66	63.16	63.66
,N.Y. R2	60.50	61.00	61.50	62.00
sburgh District				
lleIsland,Pa. P6	58.50	59.00	59.00	....
ittsburgh (N&S sides), Aliquippa, deld.	....	60.37	60.37	60.87
cKeesRocks, deld.	....	60.04	60.04	60.54
awrenceville,Homestead, Wilmerding,Monaca, deld.	....	60.66	60.66	61.16
erona,Trafford, deld.	60.69	61.19	61.19	61.69
rackenridge, deld.	60.95	61.45	61.45	61.95
semer,Pa. U5	58.50	....	59.00	59.50
rton,Rankin,S.Duquesne,Pa. U5	58.50	....	....	....
Keesport,Pa. N3	58.50	....	....	59.50
land,Pa. C18	58.50	....	....	....

Youngstown District	Basic	No. 2 Foundry	Malle-able	Besse-mer
Hubbard,O. Y1	....	....	59.00	....
Sharpsville,Pa. S6	58.50	....	59.00	59.50
Youngstown Y1	....	....	59.00	59.50
Youngstown U5	58.50	....	....	59.50
Mansfield,O., deld.	63.40	....	63.90	64.40
Duluth I-3	58.50	59.00	59.00	59.50
Erie,Pa. I-3	58.50	59.00	59.00	59.50
Everett,Mass. E1	62.00	62.50	63.00	....
Fontana,Calif. K1	64.50	65.00	....	....
Geneva,Utah C11	58.50	59.00	....	....
GraniteCity,Ill. G4	60.40	60.90	61.40	....
Ironton,Utah C11	58.50	59.00	....	....
LoneStar,Texas L6	....	55.00*	....	....
Minnequa,Colo. C10	60.50	61.00	61.50	....
Rockwood,Tenn. T3	....	55.00‡	59.00	....
Toledo,O. I-3	58.50	59.00	59.00	59.50
Cincinnati, deld.	64.26	64.76	....	....

*Phos. 0.51-0.75%; $56, Phos. 0.31-0.50%.
†Intermediate (Phos. 0.31-0.69%), $56.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.
Nickel: Under 0.05% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson,O. G2, J1	$67.50
Buffalo H1	68.75

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, (Open-hearth & Fdry, freight allowed K2)	*90.00*
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	*93.00*

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$72.50
Steelton,Pa. B2 (Phos. 0.035% max)	66.50
Philadelphia, deld.	70.05
Troy,N.Y. R2 (Phos. 0.035% max)	66.50
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	63.50
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	63.50
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	63.50

/arehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 25 cents per 100 lb except: Buffalo, Cleveland, Erie, 30 cents; Moline, Norfolk, Richmond, Washington, 20 cents; Birmingham, Chattanooga, Jackson, 15 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, San Francisco, 10 cents; Atlanta, Houston, Seattle, Spokane, no charge.

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
nta	7.14	8.20	8.87	....	7.40	...	7.42	9.39	....	7.63	7.49	9.48
imore	7.03	8.32	8.37	....	7.65	...	7.61	8.62[3]	13.44	7.93	7.21	8.87
ingham	6.80	7.90	8.85	....	7.06	...	7.08	9.35	....	7.28	6.99	9.10
on	7.70	8.81	10.27	45.67	7.96	...	7.83	9.53	14.45	8.13	7.89	9.36
falo	6.80	8.05	9.77	....	7.15	...	7.10	7.90	13.10	7.40	7.15	8.70
ttanooga	6.95	8.10	8.60	....	7.20	...	7.20	9.18	....	7.45	7.25	9.05
ago	6.80	8.09	8.50	49.05	7.06	...	7.08	7.75	12.85	7.28	6.99	8.46
innati	6.92	8.08	8.90	46.10	7.30	...	7.32	8.05	13.09	7.75	7.28	8.71
eland	6.80	8.09	8.85	49.16	7.16	...	7.14	7.85	12.91	7.61	7.16	8.63
oit	6.99	8.28	8.78	43.50	7.34	...	7.36	8.04	13.05	7.75	7.27	8.65
, Pa.	6.80	7.90	8.85	....	7.15	...	7.08	7.85	....	7.40	7.15	8.63
ston	7.85	8.75	10.49	....	8.15	...	8.25	9.85	14.06	8.20	7.80	9.20
son, Miss.	7.10	8.20	9.20	....	7.40	...	7.40	9.44	....	7.60	7.45	9.30
Angeles	8.05	10.00	11.00	....	8.35	...	8.05	11.25	14.25	8.30	8.05	10.25
aukee	6.89	8.18	8.59	....	7.15	...	7.17	7.94	12.94	7.45	7.08	8.55
ne, Ill.	7.15	8.44	8.85	....	7.41	...	7.43	8.10	....	7.63	7.34	...
York	7.46	8.68	9.44	44.95	8.07	...	7.96	9.48	13.28	7.99	7.76	9.19
olk, Va.	7.25	...	...	....	7.65	...	7.65	9.50	....	7.95	7.45	8.95
delphia	7.14	8.42	9.35	45.98	7.67	9.02	7.64	8.46	13.16	7.74	7.37	8.69**
burgh	6.80	8.09	9.20	49.00	7.16	...	7.08	7.85	12.85	7.28	6.99	8.46
land, Oreg.	7.80	8.80	10.65	....	8.00	...	7.95	12.20	15.00	7.85	7.75	9.60
mond, Va.	7.00	...	9.47	....	7.65	...	7.70	8.85	....	7.95	7.20	9.10
Louis	7.09	8.38	9.19	43.89	7.35	...	7.37	8.14	13.14	7.68	7.28	8.75
Paul	7.46	8.59	9.16	....	7.72	...	7.74	8.51	13.51	7.94	7.65	9.12
Francisco	8.10	9.65	10.15	51.65	8.35	...	8.05	11.20	14.25[3]	8.25	8.05	10.25
le	8.55	10.40	10.80	54.00	8.65	...	8.35	11.70	14.60	8.30	8.20	10.10
ane	8.55	11.00[1]	10.80	....	9.05	...	8.35	11.80	15.35	8.30	8.20	10.60
nington	7.50	8.79	7.97	....	8.12	...	8.08	9.09	....	8.40	7.68	9.34

Prices do not include gage extras; †prices include gage and coating extras (based on 12.50-cent zinc), except in Birmingham (coating extra ex-pd); ‡includes 35-cent special bar quality extras; **⅜-in. and heavier; ††as annealed; §§under ½-in.
Base quantities, 2000 to 4999 lb except as noted; Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and os Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; rolled products on West Coast, 2000 to 9999 lb; [2]—500 to 9999 lb; [3]—400 to 999 lb; [4]—4000 lb and over; [5]—1000 to 1999 lb; [6]—1000 lb and over; 500 to 3999 lb; [8]—2000 to 3999 lb; [9]—f.o.b. local delivery in lots of 10,000 lb and over.

At Detrex Corporation, Detroit, workman slips a snug fitting Johnson Bronze Bearing into place on the shaft of an idler arm of this compact Rotary Gyro Degreaser. Idler arms move in "ferris wheel" motion to rotate heavy baskets filled with parts to be degreased.

How Detrex Prevents A Maintenance Problem With Johnson Bearings

The Detrex Corporation, Detroit, manufactures a full line of unique, automatic degreasers, washers, drycleaning and other equipment to speed production, save time and money for many industries where removing oil and grease from parts and materials is a problem.

On the idlers of the totally enclosed Rotary Gyro Degreaser shown being assembled above, Johnson Bronze General Purpose Bearings give years of trouble-free service.

As a Detrex executive puts it: "When we sell a machine we want the customer to forget about shut-downs to repair some trivial part that's failed, so we design every part, choose every piece of material with one thought in mind: make it better to last longer. It's the reason we have specified Johnson Bronze General Purpose Bearings wherever bearings of this type will do the job."

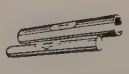
Detrex depends upon a Johnson distributor in that area for service on their bearing requirements. They have found his stocks to be adequate to meet their requirements and know that even in emergencies the bearings they need will be delivered when they want them.

Johnson General Purpose Bearings are available from stock in over 900 sizes. Alterations such as oil grooves, slots, or holes are easily and quickly made. They are cast in Johnson's famous, high grade bearing bronze alloy No. 72. For complete information on prices and delivery, call your Johnson distributor. Johnson Bronze Co., 550 South Mill Street, New Castle, Pa.

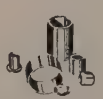
Johnson Bearings

GRAPHITED
over 175 sizes

GENERAL PURPOSE
over 900 sizes

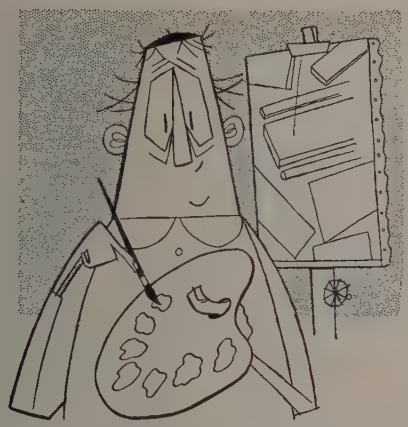


UNIVERSAL BRONZE BARS
over 400 sizes



LEDALOYL
over 400 sizes

ELECTRIC MOTOR
over 350 sizes



uminum gets dressed up like a rainbow as . . .

olor Comes to Alcoa

LORED ALUMINUM is coming of ! You can buy it directly from the .

luminum Co. of America, Pitts-gh, is offering two types of color-dized aluminum in a full range nill products: Decorative finishes ed, blue, green, gold and natural minum; and architectural finishes gold and brown and shades of y, blue, yellow and black. They available in sheet, tube, extruded pes and fasteners.

irst Pitch—This is the initial bid any aluminum producer for this rket. Reynolds Metals Co., Louis-e, has offered colored stock to its omers for several years, but it been on an inquiry basis. Kaiser minum & Chemical Corp. is work-with colored aluminum in its Di-on of Metallurgical Research in kane, but it does not produce any red stock itself.

efore Alcoa's announcement, most red aluminum was done on a shop basis after the plain stock been purchased by the fabricator. eliminating this in-between step, oa feels it can save the fabricator ey and improve the product by ntaining closer control on dye ations.

separable—Color anodized alu-um is more expensive than or-ry stock because of the extra in its manufacture. An electro-nical process produces an alu-um oxide coating on the surface he metal. This coating is impreg-d with color, so the color finish art of the metal. The time re-ed for this anodizing bath de-nines the price. It is estimated 1 sq ft of building panel will from 40 to 45 cents, compared 35 to 38 cents for plain panels.

This means, of course, that the fabricator will be generating more expensive scrap. But Alcoa officials do not feel this will be a serious drawback.

Seek Better Ductility—One of the toughest problems to solve has been the poor workability imposed by the hardness of the oxide coating. Alcoa claims fair-to-good forming characteristics for some types. F. J. Close, market development manager, believes it can be used for automobile wheel discs or covers for cooking utensils. Alcoa has had inquiries about such applications as lunch buckets and fishing tackle. Some observers hint that the time is not far off when the laboratories will come up with an oxide coating ductile enough to withstand such severe forming operations.

The biggest market probably will be in building panels. About 35 buildings which have been or are being built use the material. The outdoor furniture market looms large as a user of colored tubing. Refrigerator and auto trim markets are expected to use large tonnages of the new product.

Other possible markets are for bus and train exteriors, appliances, handrails, storm windows and even automobile tops. Alcoa also hopes to offer a maintenance-free home in the future using colored aluminum.

Sizes—Drawn and extruded tube and extruded shapes, rod and bars are available in lengths up to 30 ft. Flat sheet is available in widths up to 84 in. and lengths up to 32 ft in thicknesses subject to commercial rolling limitations. Coiled sheets are available only in the decorative finish in widths up to 24 in. and thicknesses from 0.006 to 0.051 in. inclusive.

Steel Bars . . .

Bar Prices, Page 164

Most producers of hot-rolled carbon bars are setting up allotments for the first quarter. In some cases bookings are not being accepted for the entire period, being on a month-to-month basis.

The mills are blanking out a substantial part of their first quarter production to care for anticipated carry-over orders from the fourth quarter. Some makers think they will be lucky if they are able to apply more than two months of output in the first qurter against new orders. Currently, shipments in some instances are as much as two months behind schedule.

The situation in cold-drawn bars is reported spotty. On some of the popular sizes and grades cold drawers in the East have little or no hot-rolled stock on hand to apply to new orders. They are extended on their delivery promises.

Some hot alloy bar tonnage is available for delivery this year, depending on size and grade. One large eastern seller says it can book nothing under ⅞-in. rounds for delivery this year. On certain of the larger sizes this maker can work in tonnage for late November shipment.

New England consumers report a Pittsburgh producer has opened and closed its first quarter books on district hot-rolled tonnage, booking less than 50 per cent of its normal area volume for the period.

Integrated mills can get out standard sizes of cold finished for November delivery. They are picking up some orders from converters, indicating the latter are becoming pinched for hot-rolled stock.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 165 & 166

"The fourth quarter is behind us, and we are beginning to worry about filling our customers' first quarter needs," says the sales manager of a large Pittsburgh sheetmaker.

Indications are that the delivery situation in sheets in early first quarter, 1956, will be about as tight as it is in the current delivery period. That's especially true with respect to automotive tonnage; the auto builders are expected to provide continued strong demand going into the new year.

A major sheet producer had its district sales offices check into consumers' inventories early this month. The survey showed no customer was overstocked. Most appeared to have substantial supplies, but all steel on hand was needed for fourth quarter production. Stocks of cold-rolled

seemed to be more complete than inventories of hot-rolled sheets and strip.

Most sheet producers are entering orders on their books for first quarter shipment. In general, they are allowing a liberal portion of production in the period to care for carry-over business from the fourth quarter. This means placements for first quarter will not be so heavy as consumers would like. An eastern mill blanked out January production on hot-rolled but is accepting orders for that month in cold strip, figuring it will be current on that item.

The general disposition among sheetmakers is to accept commitments for the entire first quarter, at least as much of the period as carry-over tonnage will permit. One maker of electrogalvanized sheets is allotting January production for arrearages.

Stainless Steel . . .

Stainless Steel Prices, Page 168

Soft prices on nickel-bearing stainless steel developed in the purchase of more than 750 tons, grade 305, by a Portland, Me., shop. Warehouses quoted under mill prices, mills being off in some cases. Tonnage included mostly $\frac{3}{16}$-in. plates and 12-gage sheets, large quantities of one size. The orders totaled about $500,000 and were rated volume for Navy minesweeper equipment. Scrap from the fabricating operation will go back to the mill suppliers of the steel.

The only deterrent to maximum production in the fourth quarter will be the continuing shortage of nickel, producers say. Sales for the fourth quarter appear strong to all consumers.

Following recent publicity about new designs of passenger cars, there has been gradual improvement in stainless sales to railroad carbuilders. Most new designs incorporate larger amounts of stainless, but in most cases carbuilders using steel have been doing so for many years. However, there are increasing applications of stainless inside passenger cars, in trim and on doors.

Plates . .

Plate Prices, Page 164

While some of the plate mills have opened their books for first quarter orders, others are still going through the process of getting ready to do so. One eastern producer hasn't started to take orders for December shipments; when it does, it may open its books for January tonnage as well. The extent of carry-overs at year end will vary, depending upon producers' booking policies.

The Claymont, Del., producer not get the larger of its two back into operation before the of this month. This unit has down for repairs since July, e for a few hours operation in tember.

Fabricating shops in New En are more concerned over near-f tonnage. Heavy volume consu requirements are creeping up tably railroad car and defense r An increasing proportion of de is for military and naval cont Numerous consumers are unce as to how much tonnage will be able for first quarter.

Shipbuilding will take more p next quarter with additional tracts, including one super ai carrier, soon to be closed; also tower radar platforms in Texas.

There's no letup in deman plate from machinery builders, cellaneous jobbers or railroads, burgh producers report. Inven in plants of all major cons are low.

As some emergency requests from construction firms, pre priced plate has entered the burgh area from the East.

Structural Shapes .

Structural Shape Prices, Page 164

Structural shape requirement tinue well in excess of supply, after taking into consideration leveling off in building constru However, a heavy volume of w still in prospect.

Producers of shapes are still ning behind on commitments. cations are, at least as far as flange sections are concerned, will not be current before Feb at the earliest. To date, the ing shape producers have not o books for the first quarter.

Most of the large and me sized fabricating shops are b well ahead, and, in view of the tinued shortage of plain materia selective in their bidding.

New business is heavy. Tr dous jobs are in prospect. S consideration is being given t construction of a second roadwa the George Washington bridge the Hudson river, requiring tons. Some trade interests b this project may become alive spring, but, admittedly, much ning has to be given to the con tion of additional roadways to h the extra traffic on both sid the Hudson.

Another large job in that di is the Narrows bridge between ten Island and Brooklyn, N. Y. mated to require 180,000 tons of including 30,000 tons of cable.

also is many months away, but is gradually shaping up.

The biggest project of all, that of Webb & Knapp in the Pennsylvania Railroad terminal area, New York, is in the planning stage. This will require about 190,000 tons, plus or minus a few thousand.

For 50 replacement bridges, Massachusetts has received bids on prestressed concrete beams, including 115,000 lb of ⅜-in. prestress strand. Extended delivery on fabricated structural steel is one factor in going to prestressed beams, f.o.b. Worcester, Mass. For bridges, delivery in the second quarter of next year, estimating is heavier.

First contracts for Connecticut's Greenwich-Killingly highway total 14,000 tons. School and industrial requirements for light structurals and long-span joists are heavier, with plain material in those sizes and shapes more extended.

On the West Coast, a substantial increase in homebuilding has taken up the slack caused by reduced highway construction. For structural producers, this means an about-face in their planning, but a possible increase in fourth-quarter sales.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3700 tons, plant project in the south to mont Iron Works, Eddystone, Pa.

3600 tons, office structure, CIT Corp., son Ave. and 59th St., New York, to Structural Steel Co., New York.

2040 tons, 905-ft span, bridge superstru Greenwich-Killingly expressway, No river, Norwalk, Conn., to Klevins Yonkers, N. Y., $1,191,065, bids Sep Hartford, Conn.; also, 335 tons, co reinforcing bars. 270 tons, building add American Cyanamid Co., Wallingford, to American Bridge Div., U. S. Steel

2000 tons, state thruway work, Chat county, N. Y., through Bates & R general contractor, Buffalo, to Am Bridge Division, U. S. Steel Corp., burgh.

1600 tons, state thruway work, Erie co Pa., through Yonkers Contracting Co., eral contractor, to American Bridge Div U. S. Steel Corp., Pittsburgh.

1300 tons, Hollingsworth-Whitney Div Scott Paper Co., Mobile, Ala., to Am Bridge Division, U. S. Steel Corp., burgh.

1200 tons, state bridge, Berks county, through F. D. Kessler, general contr to Bethlehem Steel Co., Bethlehem, Pa

1100 tons, power plant extension, Unite luminating Co., Bridgeport, Conn., to burgh Bridge & Iron Co., Pittsburgh.

1000 tons, laboratory, Bakelite Division, Carbide & Carbon Corp., Bound B N. J., to Bethlehem Steel Co., Bethl Pa.

855 tons, manufacturing plant, Hind Dauch Paper Co., Eaton, O., to Pitts Bridge & Iron Works, Pittsburgh.

620 tons, state highway bridge, Oneida co N. Y., through Lane Construction Co., eral contractor, to American Bridge Div U. S. Steel Corp., Pittsburgh.

620 tons, pavilion, St. Luke's Hospital, sterdam Ave. and 113th St., New through John Lowry Inc., to White Iron Works, White Plains, N. Y.

550 tons, contract G-5, approach work, delphia-Gloucester bridge to be know the Walt Whitman bridge, Delaware Port Authority, through F. A. Canu Sons Inc., Philadelphia, to American Division, U. S. Steel Corp., Pittsburg

483 tons, gates, stoplogs, etc., The dam, to Food Machinery & Chemical San Jose, Calif., low at $205,927, to Engineer, Portland, Oreg.; bids were o Sept. 2.

380 tons, junior high school, Roslyn, N through John Eisele, general contracto Grand Iron Works, Bronx, New York.

315 tons, plastics manufacturing plant, vania Electric Products Inc., Warren, to American Bridge Division, U. S. Corp., Pittsburgh.

300 tons, state highway bridge, Sar county, N. Y., through Lane Constru Co., to Ernst Iron Works, Buffalo.

250 tons, laboratory, American Cyanamid Bound Brook, N. J., to Savary & Gl Bound Brook.

240 tons, state bridge, Northampton co Pa., through Keelor Construction Co., eral contractor, to Mayer Pollock, town, Pa.

215 tons, office building, National G Liability Co., Syracuse, N. Y., to Ame Bridge Division, U. S. Steel Corp., burgh.

200 tons, additional award, Alcoa plan pansion, Wenatchee, Wash., to Pacific & Foundry Co., Seattle.

160 tons, central boiler plant, engine la tory, Middletown, Conn., to Standard tural Steel Co., Hartford, Conn.

STRUCTURAL STEEL PENDING

2000 tons, power plant, Schuylkill st Philadelphia Electric Co., Philadelphia; asked.

1305 tons, seven overpass structures, G wich-Killingly expressway, Stratford-Mi Conn.; also 875 tons of steel piling.

1300 tons, seven overpass structures. G wich-Killingly expressway, Stratford-Mi Conn.; bids Oct. 17, Hartford, Conn.

765 tons, stoplogs, headworks and tai Ontario hydro power house, St. Law

way project; bids Oct. 25, Toronto, Ont.
ons, RCA factory building, Bridgewater,
J.; pending.
ons, state bridge, Lycoming county, Pa.;
Oct. 28.
ons, also 22 tons of reinforcing, 574-ft
ntana state bridge, Yellowstone river;
eral contract to W. P. Roscoe Co., Bill-
s, Mont., low at $294,479.
ons, also 40 tons of reinforcing, Green
r bridge, Gorge dam project, Wash-
ton state; bids will be called late in
ober by U. S. Engineer, Seattle.
ons, Allegheny county, Pa.; bids Oct. 27;
o 544 tons of reinforcing bars.
ons, including bearing piles, steel beam
dge, Spaulding turnpike, Dover, N. H.

NFORCING BARS . . .

REINFORCING BARS PLACED

tons, tunnel section, Fitzgerald express-
y, Boston, Oliver-Kneeland streets, to
thlehem Steel Co., Bethlehem, Pa.; V.
rletta Co., Boston, general contractor.
tons, grade crossing elimination, Boston
Maine Railroad, state project, Salem,
ss., to Concrete Steel Co., Boston; Fa-
a Bros. Inc., Watertown, Mass., general
ntractor.
tons, state highway bridges, Southeast
pressway, Boston-Milton, Mass., to Milton
el Co., Milton, Pa.; Savin Construction
., East Hartford, Conn., general contrac-
r.
tons, power plant extension, Western
ssachusetts Electric Co., West Spring-
ld, Mass., to Concrete Steel Co., Boston;
one & Webster Engineering Corp., Boston,
gineer-contractor.
tons, water reservoir, Tacoma, Wash.,
Soule Steel Co., Seattle; general contract
Ostruske-Murphy Co., Tacoma, low at
30,755.
tons, admissions treatment building, state
spital, Taunton, Mass., to the Concrete
eel Co., Boston; Joseph Rugo Inc., Bos-
n, general contractor.
tons, building, state hospital, Waltham,
ass., to Joseph T. Ryerson & Son Inc.,
oston; Park Construction Co., Boston, gen-
al contractor.

REINFORCING BARS PENDING

tons, flood control project, Hoosic Basin,
orth Adams, Mass., Corps. of Engineers,
oston; Petricca Construction Co., Pitts-
eld, Mass., low on general contract.
tons, Robinson Bay lock, St. Lawrence
away project, St. Lawrence, N. Y.; plans
ady shortly, Corps of Engineers, Buffalo.
tons, substructure of bridge, Housatonic
ver, Stratford-Milford, Conn.; also 1800
ns of steel piling.
tons, highway viaduct extension, Seattle;
neral contract to Rumsey & Co., Seattle,
w at $727 654; piling also involved to be
ate furnished.
tons, Greenwich-Killingly expressway,
ratford-Milford, Conn.
tons, piers, Morrison street bridge, Port-
nd, Oreg.; general contract to Manson
onstruction & Engineering Co., Seattle,
w at $1,937,480.
tons, state bridge work, Allegheny county,
a.; bids Oct. 27; also 193 tons of shapes.
tons, Washington state overhead girder
idge, King county; general award to An-
erson Bridge Construction Co., Tacoma,
ash., low at $397,630.
tons, sales and processing plant, Swift
Co., Somerville, Mass.

ATES . . .

PLATES PLACED

tons, two 181,736-bbl tanks, The Texas
o., Lawrenceville, Ill., to General American
ransportation Corp., Chicago.
tons, up to 60-in. welded steel pipe, to
onsolidated Western Steel Corp., Seattle;
upplementary contract for General Electric
o., Hanford, Wash.
tons, 17 tanks, Erie Mining Co., Aurora,
inn., to Bethlehem Steel Co., Bethlehem,
a.
tons, five storage silos, Erie Mining Co.,
urora, Minn., to Bethlehem Steel Co.,
ethlehem, Pa.
tons, four propane tanks, New Departure Division, General Motors Corp., Bristol, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

PLATES PENDING

1000 tons, additional pressure tanks, etc., for pulp plant under construction at Cosmopolis, Wash.
1000 tons, additional tank contracts, stainless steel, Weyerhaeuser Lumber Co.'s chlorine plant, Longview, Wash.
500 tons, 5-million-gal water tank, Hood river, Oreg.; Pittsburgh-Des Moines Steel Co., Seattle, low at $118,776.
245 tons, hull plates, medium tensile, General Stores Supply Office, Navy, Philadelphia.
200 tons, 2-million-gal standpipe, District No. 68, Bellevue, Wash.; bids Nov. 2.
150 tons, bulk storage, air base tanks; bids to Corps of Engineers, Boston.
100 tons, one-million-gal steel standpipe; bids to King county, District No. 75, Washington Oct. 19. W. L. Richter, secretary.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Pennsylvania, 21 all-purpose diesel locomotives, 16 of 1600-hp and five of 2400-hp, to Alco Products Inc., New York.

LOCOMOTIVES PENDING

Erie Railroad, ten diesel-electric locomotives, including six 1600-hp general-purpose switchers, and four 1200-hp yard switchers.

RAILROAD CARS PENDING

Grand Trunk Western, 100 covered hopper cars; bids asked.

RAILS PLACED

Delaware, Lackawanna & Western, 8500 tons, with 6500 tons going to Bethlehem Steel Co., Bethlehem, Pa., and 2000 tons to U. S. Steel Corp., Pittsburgh.

RAILS PENDING

New York Central, 40,000 tons; bids asked.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 164

Concrete reinforcing bar lettings are heavy in New England at firmer prices, with delivery lagging on old orders and more extended on new ones.

Shipments are one month to six weeks late, but delays in construction schedules are not entirely due to delinquent deliveries of reinforcing. Shortages of cement, structurals and piling also contribute to holdups.

Tool Steel . . .

Tool Steel Prices, Page 168

Shipments of high speed and tool steel (excluding hollow drill steel) in August totaled 8994 net tons, reports the American Iron & Steel Institute. This was an increase, compared with 7504 tons moved in the preceding month and was up sharply from the 6475 tons shipped in August a year ago.

Cumulative shipments in the first eight months this year were 73,624 net tons. In the like period of 1954, only 56,665 tons had been moved into consuming channels. In the corresponding period of 1953 the total was 81,744 tons.

Tubular Goods . . .

Tubular Goods Prices, Page 168

Gradual seasonal decline in pipe and tube sales are anticipated as the fourth quarter moves along. Oil country tubing shipments usually slump in midwinter. Slower mining activity in the Rocky Mountain area also is reflected in tubular goods demand during the winter months.

Standard pipe mills continue to operate at capacity. Distributors, however, are not ordering farther ahead than November. This undoubtedly mirrors an anticipated seasonal dip in construction. Merchant pipe sales usually lag from January through March.

Ferroalloy Prices

FERROALLOY quotations remain unchanged. The current price schedule was published in full on page 279 of the Oct. 10 issue of STEEL.

Wire . . .

Wire Prices, Pages 166 & 167

The merchant wire products trade is seasonally sluggish. But improvement in demand should come in November when distributors normally begin to replenish stocks in anticipation of spring requirements.

Manufacturers of nails and barbed wire report continued competition from abroad, especially along the southern seaboard. Nails in that area are being offered at $1.25 to
per keg under domestic manufa
ers' costs, according to one es
seller. Nails are coming in c
from Belgium; an increasing a
from Japan is noted.

Manufacturers wire is m
briskly, with delivery promises
ning 10 to 12 weeks. In the Balt
area there is a particularly s
demand for bedding and furn
springs.

Steel Output Breaks Record

Record production of ingots
steel for castings in Septembe
the first nine months of this y
reported by the American Ir
Steel Institute. September outp
taled 9,881,000 net tons; the
month total was 85,782,793 ton

Steelmaking furnaces in the
months came within eight da
production in equaling the 88.3
lion tons produced in all of last
The record nine-month figure
about 272,000 tons above the pre
record, set in 1953. During the
parable period last year, produ
totaled 64,233,619 tons.

In September the index of
production was 143.5, compared
134.9 in August and 98.9 in Se
ber, 1954. The index for the firs
months was 136.9.

Production in September was
rate of 95.7 per cent of cap
that for the first nine months w
91.1 per cent.

Period	OPEN HEARTH Net tons	OPEN HEARTH Per cent of capacity	OPEN HEARTH ‡Index	BESSEMER Net tons	BESSEMER Per cent of capacity	BESSEMER ‡Index	ELECTRIC Net tons	ELECTRIC Per cent of capacity	ELECTRIC ‡Index	TOTAL Net tons	TOTAL Per cent of capacity	TOTAL ‡Index	Calculated weekly production (Net tons)
1955													
January	8,054,345	86.0	125.7	199,229	49.0	56.7	584,162	63.6	163.6	8,837,736	82.7	124.2	1,994,974
February	7,734,884	91.5	133.7	197,091	53.7	62.1	564,959	68.1	175.1	8,496,934	88.0	132.2	2,124,233
March	9,060,026	96.7	141.4	255,493	62.8	72.7	666,235	72.6	186.5	9,981,754	93.4	140.3	2,253,281
1st Quarter	24,849,255	91.4	133.6	651,813	55.2	63.9	1,815,356	68.1	175.1	27,316,424	88.0	132.3	2,124,139
April	8,858,549	97.7	142.9	275,069	69.8	80.9	681,477	76.6	197.2	9,815,095	94.8	142.6	2,287,901
May	9,307,291	99.4	145.3	305,347	75.1	86.9	715,678	77.9	200.4	10,328,316	96.6	145.2	2,331,448
June	*8,764,430	96.6	141.4	283,544	72.0	83.4	*698,493	78.6	202.1	9,746,467	94.1	141.6	2,271,904
2nd Quarter	*26,930,270	97.9	143.2	863,960	72.3	83.8	*2,095,648	77.7	199.9	29,889,878	95.2	143.1	2,297,454
1st 6 Months	*51,779,525	94.7	138.5	1,515,773	63.8	73.9	*3,911,004	72.9	187.5	57,206,302	91.6	137.7	2,211,299
July	8,232,535	88.1	128.5	268,348	66.1	76.4	600 063	65.5	168.0	9.100.946	85.3	127.9	2,059.038
*August	8,600,612	91.8	134.3	298,972	73.5	85.1	694,000	75.7	194.6	9,594,545	89.7	134.9	2,165,812
†September	8,828,000	97.6	142.4	307,000	78.1	90.3	746,000	84.1	215.8	9,881,000	95.7	143.5	2,309,000
3rd Quarter	25,661,147	92.4	135.0	874,320	72.5	83.8	2,041,024	75.0	192.6	28,576,491	90.2	135.4	2,176,427
9 Months	77,440,672	93.9	137.3	2,390,093	66.8	77.2	5,952,028	73.6	189.2	85,782,793	91.1	136.9	2,199,559
1954													
January	7,256,526	78.3	113.3	260,453	64.0	74.1	434,507	48.9	121.7	7,951,486	75.3	111.8	1,794,918
February	6,523,213	77.9	112.8	174,253	47.4	54.9	385,771	48.1	119.6	7,083,237	74.3	110.2	1,770,809
March	6,649,667	71.7	103.8	207,726	51.1	59.1	432,207	48.7	121.0	7,289,600	69.0	102.5	1,645,508
1st Quarter	20,429,406	75.9	109.9	642,432	54.4	63.0	1,252 485	48.6	120.8	22,324,323	72.8	108.1	1,735,950
April	6,365,326	70.9	102.7	162,657	41.3	47.8	442.954	51.5	128.2	6,970,937	68.1	101.3	1,624,927
May	6,817.951	73.6	106.4	198,063	48.7	56.4	456,724	51.4	127.9	7,472,738	70.7	105.0	1,686,848
June	6,702.006	74.7	108.1	207,666	52.7	61.1	453,962	52.8	131.3	7,363,634	72.0	107.0	1,716,465
2nd Quarter	19,885,283	73.1	105.8	568,386	47.6	55.1	1,353.640	51 9	129.1	21,807,309	70.3	104.4	1,676,196
1st Half	40.314.689	74.5	107.8	1,210,818	51.0	59.0	2.606,125	50 3	125.0	44.131,632	71.5	106.2	1,705.900
July	6,040,120	65.3	94.3	205,313	50.6	58.4	382,164	43.1	107.0	6.627,597	62.9	93.2	1,499,456
August	6,021,496	65.0	94.0	217,837	53.6	62.0	427,574	48.2	119.7	6.666.907	63.1	93.7	1,504,945
September	6,140,266	68.6	99.1	214,065	54.5	63.0	453.152	52.8	131.1	6.807.483	66.7	98.9	1,590,533
3rd Quarter	18,201,882	66.3	95.8	637,215	52.9	61.1	1,262,890	48.0	119.1	20,101,987	64.2	95.2	1,530,997
9 Months	58,516,571	71.7	103.7	1,848,033	51.6	59.7	3.869.015	49.5	123.0	64.233,619	69.1	102.5	1,647,016
October	6,973,568	75.2	108.9	237,754	58.5	67.7	490.211	55.2	137.3	7,701,533	72.9	108.3	1,738,495
November	7,307,151	81.4	117.9	231,191	58.7	68.0	551.085	64.1	159.4	8,089.427	79.1	117.5	1,885,647
December	7,530.204	81.4	117.6	231,126	57.0	65.8	525.743	59.4	147.2	8,287,073	78.6	116.5	1,874,903
4th Quarter	21,810,923	79.3	114.7	700,071	58.0	67.1	1,567,039	59.5	147.8	24,078,033	76.8	114.0	1,832,423
2nd Half	40.012,805	72.8	105.2	1,337,286	55.4	64.1	2.529,929	53.8	133.5	44,180,020	70.5	104.6	1,681,767
Total	80,327,494	73.6	106.5	2,548,104	53.2	61.6	5,436,054	52.0	129.3	88,311,652	71.0	105.4	1,693,741

Note—The percentages of capacity operated are calculated on weekly capacities in 1955 of 2,114,196 net tons open hearth, 91,810 net tons be and 207,272 net tons electric ingots and steel for castings, total 2,413,278 net tons; based on annual capacities as of Jan. 1, 1955, as follows hearth 110,234,160 net tons, bessemer 4,787,000 net tons, electric 10,807,150 net tons, total 125,828,310 net tons.
Note—The percentages of capacity operated are calculated on weekly capacities in 1954 of 2,092,342 net tons open hearth, 91,810 net tons be and 200,397 net tons electric ingots and steel for castings, total 2,384,549 net tons; based on annual capacities as of Jan. 1, 1954, as follows hearth 109,094,730 net tons, bessemer 4,787,000 net tons, electric 10,448,680 net tons, total 124,330,410 net tons.
*Revised. †Preliminary figures, subject to revision. ‡Index of production based on average weekly production of the three years 1947-1948-194

"One-hit" Production

Freeway's PATENTED dies, which blank, form and trim small metal stampings in ONE operation . . . cut press costs almost in half on these parts, to insure our customer a substantial saving. Other precision stampings reflect the same economical handling . . . at Freeway. Let us prove these savings . . . with a quotation.

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SAF-I-CHEM
Maximum eye protection against acids, alkalis, chemical splashes, dust, impacts.

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All-purpose eye protection against impacts, fits over personal spectacles.

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... LARGE

Double geared and twin driven for balanced distribution of power.

SMALL .....

Features of this Press Brake, which are found only in more expensive presses are: Welded Steel Construction, 3" Stroke, Shut Height Full 12"

Send for NEW catalog illustrating n models of Press Brakes and incl Standard 90 Carbon Forged Steel Brake Dies.

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SERVICE MACHINE CO., INC
ESTABLISHED 1919

154 Miller St. Elizabeth 4, N.

es

Lake Superior Iron Ore

es effective for the 1955 shipping season, ton, 51.50% iron natural, rail of vessel, lake ports)

range bessemer	$10.40
range nonbessemer	10.25
bi bessemer	10.25
bi nonbessemer	10.10
-hearth lump	11.25
phosphorus	10.00

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

dry and basic 52-62% concentrates	
ntract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

ish basic, 60-68%	20.00
African hematite (spot)	nom. 18.00-20.00
ilian iron ore, 68-69% (spot)	24.00-26.00

Tungsten Ore

Net ton unit, before duty

ign, wolframite, good commercial	
ality	$34.50-$35.00
estic, scheelite, mine	63.00

Manganese Ore

48%, nearby, 95c-$1.05 per long ton unit, U. S. ports, duty for buyer's account; 7%, 75c-80c.

Chrome Ore

s ton, f.o.b. cars New York, Philadel- Baltimore, Charleston, S. C., plus ocean ht differential for delivery to Portland, , Tacoma, Wash.

Indian and African

2.8:1	nom. $45.00-$50.00
3:1	42.00-44.00
no ratio	34.00

South African Transvaal

no ratio	$19.00-$20.00
no ratio	32.00

Domestic

Rail nearest seller

3:1	$39.00

Molybdenum

hide concentrate, per lb of Mo con- nt, mines, unpacked $1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

0%	$3.60-$3.85
5%	3.85-4.00

Vanadium Ore

Cents per lb V_2O_5 content, deld. mills

ntity	31.00

efractories

Fire Clay Brick (per 1000)

-Heat Duty: Ashland, Grahn, Hayward, hins. Haldeman, Olive Hill, Ky., Athens, p, Tex., Beech Creek, Clearfield, Curwens- Lock Haven, Lumber, Orviston, West tur, Pa., Bessemer, Ala., Farber, Mexico, Louis, Vandalia, Mo., Ironton, Oak Hill, al, Portsmouth, O., Ottawa, Ill., Stevens ery, Ga., $122; Salina, Pa., $127; Niles, $133.

r-Duty: St. Louis, $150.

Silica Brick (per 1000)

dard: Alexandria, Claysburg, Mt. Union, ul, Pa., Ensley, Ala., Portsmouth, O., ston, Pa., $128; Warren, Niles, O., Hays, $133; Morrisville, Pa., $131.50; E. Chi- , Ind., Joliet, Rockdale, Ill., $138; Lehigh, , $144; Los Angeles, $151.

r Duty: Hays, Sproul, Hawston, Pa., ren, Windham, O., Athens, Tex., $145; lsville, Pa., Niles, O., $148; Joliet, Ill., ; Curtner, Calif., $163.

Semisilica Brick (per 1000)

rfield, Pa., $139; Philadelphia, $124; Wood- ge, N. J., $122.

Insulating Fire Brick (per 1000)

F: Massillon, O., $178.50; Clearfield, $213; Augusta, Ga., Beaver Falls, Zeli- le, Pa., Mexico, Mo., $206; Vandalia, Mo., .10; Portsmouth, O., $207.50; Bessemer, , $212.80.

Ladle Brick (per 1000)

Pressed: Alsey, Ill., Chester, New Cumber- , W. Va., Freeport, Johnstown, Merrill ion, Pa., Mexico, Mo., $88.50; Wellsville, $92.50; Clearfield, Pa., Portsmouth, O.,

High-Alumina Brick (per 1000)

per Cent: Clearfield, Pa., St. Louis, Mexi- Mo., $194; Danville, Ill., $197; Philadel- , $201.

per Cent: St. Louis, Mexico, Vandalia, Mo., rfield, Pa., $241; Danville, Ill., $244; adelphia, $248.

per Cent: St. Louis, Mexico, Vandalia, Mo., ; Danville, Ill., $281; Clearfield, Pa., adelphia, $286.

Sleeves (per 1000)

sdale, Johnstown, Bridgeburg, Pa., $157; rfield, Pa., $158.50; St. Louis, $169.30.

Nozzles (per 1000)

sdale, Pa., $253.70; Johnstown, Pa., .20; Clearfield, Pa., $259.40; St. Louis, .45; Bridgeburg, Pa., $286.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $196; Clearfield, Pa., $198; St. Louis, $195.80.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, O., Gibsonburg, Narlo, O., $15; Thornton, McCook, Ill., $15.60; Dolly Siding, Bonne Terre, Mo., $14.

Magnesite (per net ton)

Domestic, dead-burned, bulk, ½-in. grains with fines: Chewelah, Wash., $40; Luning, Nev., $40. ⅜-in. grains with fines: Baltimore, $66.40.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$13.25-$14.00
Connellsville, foundry	16.00-17.00

Oven Foundry Coke

Kearny, N. J., ovens	$25.50
Camden, N. J., ovens	25.00
Everett, Mass., ovens	
New England, deld.	*27.05
Chicago, ovens	25.75
Chicago, deld.	27.25
Terre Haute, Ind., ovens	25.50
Milwaukee, ovens	26.25
Indianapolis, ovens	25.50
Portsmouth, O., ovens	24.75
Cincinnati, deld.	27.34
Painesville, O., ovens	26.25
Cleveland, deld.	28.18
Erie, Pa., ovens	25.00
Birmingham, ovens	*24.40*
Cincinnati, deld.	*29.33*
Buffalo, ovens	25.75
Buffalo, deld.	27.00
Lone Star, Tex., ovens	19.50
Neville Island, Pa., ovens	25.00
Philadelphia, ovens	25.00
Swedeland, Pa., ovens	25.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	25.00
Detroit, ovens	26.25
Detroit, deld.	27.25
Pontiac, deld.	27.81
Saginaw, deld.	29.33

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Ammonium sulphate	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol: Grade 1, 14.00; Grade 2-3, 13.50; Grade 4, 15.50; Grade 5, 14.25.

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $38-$39; 70%, $35-$36; 60%, $31-$32. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $34; Mexican, $25.50.

Electrodes

Threaded with nipple, unboxed, f.o.b. plant

GRAPHITE

Diam (Inches)	Length	Per 100 lb
2	24	$52.50
2½	30	33.75
3	40	32.00
4	40	30.25
5⅛	40	30.00
6	60	27.25
7	60	26.75
8, 9, 10	60	24.25
12	72	27.25
14	60	23.50
16	72	22.50
17	60	23.00
18	72	22.50
20	72	22.25

CARBON

8	60	12.10
10	60	11.80
12	60	11.75
14	60	11.70
14	72	10.85
17	60	10.75
17	72	10.35
20	84	10.30
20	90	10.10
24	72, 84	10.30
24	96	10.05
30	84	10.20
40, 35	110	9.90
40	100	9.90

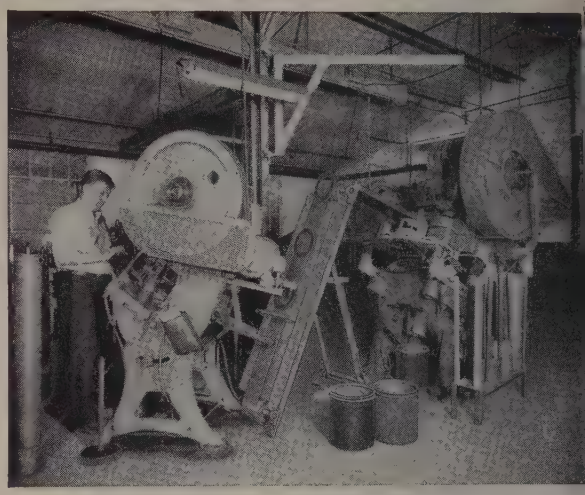
STOP WASTING PREMIUM FLOOR SPACE

INCREASE PLANT PRODUCTION . . . ELEVATE AND CONVEY—MAGNETICALLY!

HOMER "SPACE-SAVER" MAGNETIC CONVEYORS

the modern method of handling ferrous parts

Here's how many valuable hours of time are saved in the manufacture of Lima Electric Motors, by The Lima Electric Motor Company. Photo at right shows how Lima uses the Homer "Space-Saver" Magnetic Elevator-Conveyor between presses, in stamping rotor and stator laminations. The Homer "Space-Saver" makes possible tandem operation of two presses—with one operator and permits close grouping of machines. Another "Space-Saver" receives stampings from tandem press and automatically stacks finished laminations without manual assistance.



- **PORTABILITY** — Can be installed as a portable or stationary unit— easily moved from one location to another.
- **ADAPTABILITY** — Built in standard or custom units. Can be used in new or existing production lines.
- **FLEXIBILITY** — Magnetically elevates and conveys nuts, bolts, nails, washers, tin cans, bottle caps, ferrous stampings, etc.

If you have a ferrous material elevating or conveying problem, we suggest you write us today for complete information on HOMER "Space-Saver" Magnetic Elevator-Conveyors.

THE HOMER MANUFACTURING CO. INC.
DEPT. 149 LIMA, OHIO

HOMER . . . *the FINEST in Permanent Magnetic Equipment for Industry*

PERFORATED METALS
TO YOUR REQUIREMENTS
FOR
ALL INDUSTRIAL USES
ARCHITECTURAL GRILLES
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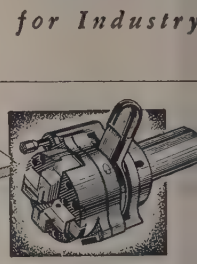
DIAMOND MFG. CO.
BOX 32 WYOMING, PA.

H&G Insert Chaser DIE HEADS



famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

THE EASTERN MACHINE SCREW CORP., 22-42 Barclay Street, New Haven,
Pacific Coast Representative: *A. C. Berbringer, Inc., 334 N. San Pedro St., Angeles, California.* Canada: *F. F. Barber Machinery Co., Toronto, Ca*

LAY YOUR SHEARING PROBLEMS AT STAMCO'S DOOR

for Corrugating and Complete Line of Cu
Equipment—Slitting and Coiling Equipment for
rous and Non-Ferrous Material in All Capaciti
Warehouse and Steel Mill Cut to Length Line
Shearing and Levelling Sheets from Coils—Sh
for Shearing Sheets and Plates Both Underdr
and Overdriven Types in Capacities to 1¼" P

STAMCO, Inc., New Bremen, Ohio

IF METALWORKING PLANTS ARE YOUR PROSPECTS . . .

STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.

rap . . .

Scrap Prices, Page 182

hiladelphia—Scrap prices con-
e strong. Electric furnace bundles
higher at $48.50, delivered, and
hine shop turnings and mixed
ngs and turnings are quoted at
50-$29.50. Heavy turnings have
advanced to $43, delivered, and
crops to $58-$59.

rices on major open-hearth
des of scrap are unchanged.

ittsburgh—The general upward
d in borings and turnings, cast
scrap and No. 1 railroad heavy
ting scrap continues. Quotations
those grades edged upwards an
rage of $1 a ton, reflecting heavy
th quarter industrial demand.
other grades, the situation is
ic. While brokers say demand
ght in view of production rates,
corporation purchasing agents
rt they have comfortable inven-
es and are adding to them in
paration for winter.

leveland—Railroad lists brought
stantially higher prices last week
lting in a markup of about $2 a
on most items in that category.
erwise, the scrap market is quiet,
h prices on both steelmaking and
ndry grades of dealer material
hanged in the absence of repre-
tative sales.

uffalo — Market sentiment con-
es strong with new business re-
ted in both steelmaking and cast
des of scrap at recently estab-
ed prices. Stocks are ample for
lers to meet sales commitments.
t receipts are light.

incinnati—Limited purchases by
local mill boosted prices here last
k. Steelmaking grades advanced
0 to $2 a ton. Rails went up $3
$4 under strong demand from the
ndries. Turnings and borings
ved up $1.

ew York—Scrap business is brisk
e, with prices strong but un-
nged. Particular strength is
ed in the cast market. District
sumers of cast and those outside
local area are buying more ac-
ly, especially No. 1 cupola.

hicago — Steelmaking operations
this district hit 98 per cent of ca-
ity last week, the highest since
first week in June. Buying of
ap by the mills is on the conserva-
e side to reduce pressure on the
rket.

etroit—The scrap market here is
n with prices unchanged. Ingot
rations in the district last week
e estimated at 94 per cent of ca-
ity.

t. Louis—Scrap has moved up sharply, spurred by a $2 rise in the bid price of premium grades by the district's two leading consumers, Laclede and Granite City Steel companies. Shipments under old prices have failed to bring in tonnage sufficient for daily melt because scrap producers nearby have been shipping to other districts for freight or price reasons. With the $2 boost in melting steel and bundles, cast grade buyers moved in to replenish foundry inventories. Rails went up 50 cents to $4 as buyers sought to stem their recent heavy movement to Chicago.

Birmingham—No. 2 bundles continue to overhang the scrap market in large quantities. Dealers are stretching buy orders of all steel grades to include bundles in an effort to dispose of the surplus. An Atlanta mill has raised its local price for No. 2 steel to $38, up $2 over its last offer, with the $5 premium for material shipped from a distance still prevailing. Exports continue active.

Los Angeles—The scrap market is slightly less active than it was last quarter. Many large consumers have curtailed their purchases somewhat.

San Francisco—The mills have lifted their buying prices on top grades of steel scrap $3 a ton.

Pig Iron . . .

Pig Iron Prices, Page 169

Foundries are operating at a good clip, and this is providing active demand for pig iron. Most gray iron shops are operating at 80 per cent of capacity, some even higher.

Prospects are that iron shipments in the fourth quarter will be heavy.

Keokuk Electro-Metals Co., Keokuk, Iowa, announced an increase of $2.50 per gross ton on all grades of electric furnace silvery pig iron effective Oct. 6.

New Jersey Zinc Co. advanced the price of spiegeleisen $2 a ton, effective Oct. 12. Under the new schedule, 21-23 per cent material is quoted $90.50, Palmerton, Pa., per gross ton in carlots, 19-21 per cent material, $88, and 16-19 per cent, $86.

Warehouse . . .

Warehouse Prices, Page 169

Large warehouses closely affiliated with major steel proudcers have joined small distributors in complaining about the difficulty of maintaining balanced stocks. Practically all products, excepting tin plate and wire, are in short supply. It's im-

(*Please turn to page* 184)

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as report
STEEL. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Oct. 12	$45.33
Oct. 5	45.33
Sept. Avg.	44.42
Oct. 1954	32.25
Oct. 1950	41.37

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer's plant)

No. 1 heavy melting..	44.00-45.00
No. 2 heavy melting..	40.00-41.00
No. 1 bundles	44.00-45.00
No. 2 bundles	37.00-38.00
No. 1 busheling	44.00-45.00
Machine shop turnings..	*30.00-31.00*
Mixed borings, turnings.	*30.00-31.00*
Short shovel turnings	*33.00-34.00*
Cast iron borings	*33.00-34.00*
Cut structurals, 3 ft lengths	49.00-50.00
Heavy turnings	42.00-43.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	48.00-49.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Charging box cast	*39.00-40.00*
Heavy breakable cast..	*39.00-40.00*
Unstripped motor blocks	29.00-30.00
No. 1 machinery cast	*48.00-49.00*

Railroad Scrap

No. 1 R.R. heavy melt..	*48.00-49.00*
Rails, 2 ft and under	54.00-55.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths..	51.00-52.00
Railroad specialties	53.00-54.00

Stainless Steel Scrap

18-8 bundles & solids	270.00-285.00
18-8 turnings	130.00-140.00
430 bundles & solids	100.00-110.00
430 turnings	60.00-65.00

CLEVELAND

(Delivered consumer's plant)

No. 1 heavy melting..	44.00-45.00
No. 2 heavy melting..	32.00-33.00
No. 1 bundles	44.00-45.00
No. 2 bundles	29.00-30.00
No. 1 busheling	44.00-45.00
Machine shop turnings	23.00-24.00
Mixed borings, turnings	27.50-28.50
Short shovel turnings..	27.50-28.50
Cast iron borings	27.50-28.50
Low phos.	45.00-46.00
Cut structural plates 2 ft and under	49.00-50.00
Alloy free, short shovel turnings	31.00-32.00
Electric furnace bundles	44.00-45.00

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	40.00-41.00
Stove plate	46.00-47.00
Heavy breakable cast..	37.00-38.00
Unstripped motor blocks	29.00-30.00
Brake shoes	35.00-36.00
Clean auto cast	48.00-49.00
Burnt cast	37.00-38.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R.R. malleable	*53.00-54.00*
Rails, 2 ft and under	*62.00-63.00*
Rails, 18 in. and under	*63.00-64.00*
Rails, random lengths	*58.00-59.00*
Cast steel	*48.00-49.00*
Railroad specialties	*54.00-55.00*
Uncut tires	*49.00-50.00*
Angles, splice bars	*54.50-55.50*
Rails, rerolling	*63.00-64.00*

Stainless Steel
(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids..	290.00-300.00
18-8 turnings	130.00-140.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer's plant)

No. 1 heavy melting...	47.50-48.50
No. 2 heavy melting...	35.00-36.00
No. 1 bundles	47.50-48.50
No. 2 bundles	32.00-33.00
No. 1 busheling	47.50-48.50
Machine shop turnings.	24.00-25.00
Short shovel turnings..	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	47.50-48.50
Electric furnace bundles	47.50-48.50

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00

CHICAGO

No. 1 heavy melting ..	44.00-46.00
No. 2 heavy melting ..	36.00-37.00
No. 1 factory bundles.	46.00-47.00
No. 1 dealer bundles..	43.00-44.00
No. 2 bundles	33.00-34.00
No. 1 busheling	44.00-46.00
Machine shop turnings.	29.00-30.00
Mixed borings, turnings.	*31.00-32.00*
Short shovel turnings.	31.00-32.00
Cast iron borings	31.00-32.00
Cut structurals, 3 ft	*49.00-50.00*
Punchings & plate scrap.	*50.00-51.00*

Cast Iron Grades

No. 1 cupola	48.00-49.00
Stove plate	37.00-38.00
Unstripped motor blocks	34.00-35.00
Clean auto cast	53.00-54.00
Drop broken machinery	53.00-54.00

Railroad Scrap

No. 1 R.R. heavy melt..	*48.00-49.00*
R.R. malleable	*56.00-57.00*
Rails, 2 ft and under	*60.00-61.00*
Rails, 18 in. and under.	*61.00-62.00*
Angles, splice bars	*57.00-58.00*
Rails, rerolling	65.00-66.00

Stainless Steel Scrap

18-8 bundles & solids	290.00-300.00
18-8 turnings	160.00-170.00
430 bundles & solids	100.00-105.00
430 turnings	45.00-50.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting..	40.00
No. 2 heavy melting..	30.00
No. 1 bundles	40.00
No. 2 bundles	29.00
No. 1 busheling	40.00
Machine shop turnings	22.50
Mixed borings, turnings	22.50
Short shovel turnings.	25.50
Punchings & plate scrap	46.50

Cast Iron Grades

Charging box cast	32.00
No. 1 cupola	39.00
Stove plate	32.00
Heavy breakable	32.00
Unstripped motor blocks	22.00
Clean auto cast	44.00
Malleable	35.00

BIRMINGHAM

No. 1 heavy melting...	36.00-37.00
No. 2 heavy melting...	32.00-33.00
No. 1 bundles	36.00-37.00
No. 2 bundles	28.00-29.00
No. 1 busheling	36.00-37.00
Cast iron borings	17.00-18.00
Short shovel turnings..	26.00-27.00
Machine shop turnings.	25.00-26.00
Electric furnace bundles	38.00-39.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	47.50-48.00
Stove plate	44.50-45.50
Bar crops and plate	43.00-44.00
Structural plate, 2 ft..	42.00-43.00
Unstripped motor blocks	36.00-37.00
Charging box cast	*30.00-31.00*
No. 1 wheels	38.00-39.00

Railroad Scrap

No. 1 R.R. heavy melt.	42.00-43.00
Rails, 18-in. and under.	*58.00-59.00*
Rails, rerolling	*57.00-58.00*
Rails, random lengths	*52.00-53.00*
Angles, splice bars	*53.00-54.00*

PHILADELPHIA

(Delivered consumer's plant)

No. 1 heavy melting...	46.00-47.00
No. 2 heavy melting...	40.00-41.00
No. 1 bundles	46.00-47.00
No. 2 bundles	37.00-39.00
No. 1 busheling	46.00-47.00
Electric furnace bundles	*48.50*
Machine shop turnings..	*28.50-29.50*
Mixed borings, turnings	*28.50-29.50*
Short shovel turnings..	30.50-31.00
Structurals & plate	49.00-50.00
Heavy turnings	*43.00*
Couplers, springs, wheels	51.00
Rail crops, 2 ft & under	*58.00-59.00*

Cast Iron Grades

No. 1 cupola	40.00-42.00
Malleable	58.00
Heavy breakable cast..	45.00-46.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting..	41.00-42.00
No. 2 heavy melting..	37.00-38.00
No. 1 bundles	40.50-41.50
No. 2 bundles	32.00-33.00
Machine shop turnings.	20.00-21.00
Mixed borings, turnings	21.00-22.00
Short shovel turnings.	22.00-23.00
Low phos. (structural & plate)	42.00-43.00

Cast Iron Grades

No. 1 cupola	36.00
Unstripped motor blocks	25.00-26.00
Heavy breakable	38.00-39.00

Stainless Steel

18-8 borings, turnings..	150.00-160.00
430 sheets, clips, solids	115.00-120.00
410 sheets, clips, solids	100.00-105.00
18-8 sheets, clips, solids	280.00-285.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting..	36.50-37.50
No. 2 heavy melting..	31.00-31.50
No. 1 bundles	36.50-37.50
No. 2 bundles	27.00-27.50
Machine shop turnings.	18.50-19.00
Mixed borings, turnings	22.50-23.00
Short shovel turnings..	23.50-24.00
No. 1 cast	30.00-31.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast..	35.00-36.00

BUFFALO

No. 1 heavy melting...	38.00-39.00
No. 2 heavy melting..	35.00-36.00
No. 1 bundles	38.00-39.00
No. 2 bundles	32.00-33.00
No. 1 busheling	38.00-39.00
Mixed borings, turnings	28.00-29.00
Machine shop turnings.	26.00-27.00
Short shovel turnings..	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	45.00-46.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	40.00-41.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths.	47.00-48.00
Rails, 2 ft and under.	51.00-52.00
Railroad specialties...	48.00-49.00

CINCINNATI

(Brokers' buying prices: f.o.b. shipping point)

No. 1 heavy melting	*41.50-42.50*
No. 2 heavy melting	*36.00-37.00*
No. 1 bundles	*41.50-42.50*
No. 2 bundles	*33.00-34.00*
No. 1 busheling	*41.50-42.50*
Machine shop turnings..	*27.00-28.00*
Mixed borings, turnings.	*24.00-25.00*
Short shovel turnings	*30.00-31.00*
Cast iron borings	*24.00-25.00*
Low phos., 18 in.	*49.00-50.00*

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast...	*41.00-42.00*
Charging box cast	*41.00-42.00*
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
Rails, 18 in. and under.	*60.00-61.00*
Rails, random lengths	*53.00-54.00*

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	
No. 2 heavy melting	
No. 1 bundles	
No. 2 bundles	
Machine shop turnings..	
Short shovel turnings..	

Cast Iron Grades

No. 1 cupola	
Charging box cast	
Heavy breakable cast..	
Unstripped motor blocks	
Brake shoes	
Clean auto cast	
Stove plate	

Railroad Scrap

No. 1 R.R. heavy melt..	
Rails, 18 in. and under.	
Rails, random lengths..	
Rails, rerolling	
Angles, splice bars	

SEATTLE

(Delivered consumer's plan

No. 1 heavy melting..	
No. 2 heavy melting..	
No. 1 bundles	
No. 2 bundles	
No. 3 bundles	
Machine shop turnings.	15.00
Mixed borings, turnings	15.00
Short shovel turnings..	15.00
Electric furnace, No. 1..	

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	
Heavy breakable cast...	
No. 1 wheels	
Unstripped motor blocks	
Clean motor blocks	
Stove plate (f.o.b. plant)	
Brake shoes	

Railroad Scrap
(Delivered consumer's plan

Rails, random lenghs..	

LOS ANGELES

No. 1 heavy melting..	
No. 2 heavy melting..	
No. 1 bundles	
No. 2 bundles	
Machine shop turnings.	

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	43.00

SAN FRANCISCO

No. 1 heavy melting	
No. 2 heavy melting	
No. 1 bundles	
No. 2 bundles	
No. 1 busheling	
Machine shop turnings.	
Mixed borings, turnings	
Short shovel turnings	
Cast iron borings	
Cut structurals	
Heavy turnings	
Punchings & plate scrap	

Cast Iron Grades

No. 1 cupola	
Charging box cast	
Stove plate	
Heavy breakable cast.	
Unstripped motor blocks.	
Brake shoes	
Clean auto cast	
No. 1 wheels	
Burnt cast	
Drop broken machinery	

HAMILTON, ONT.

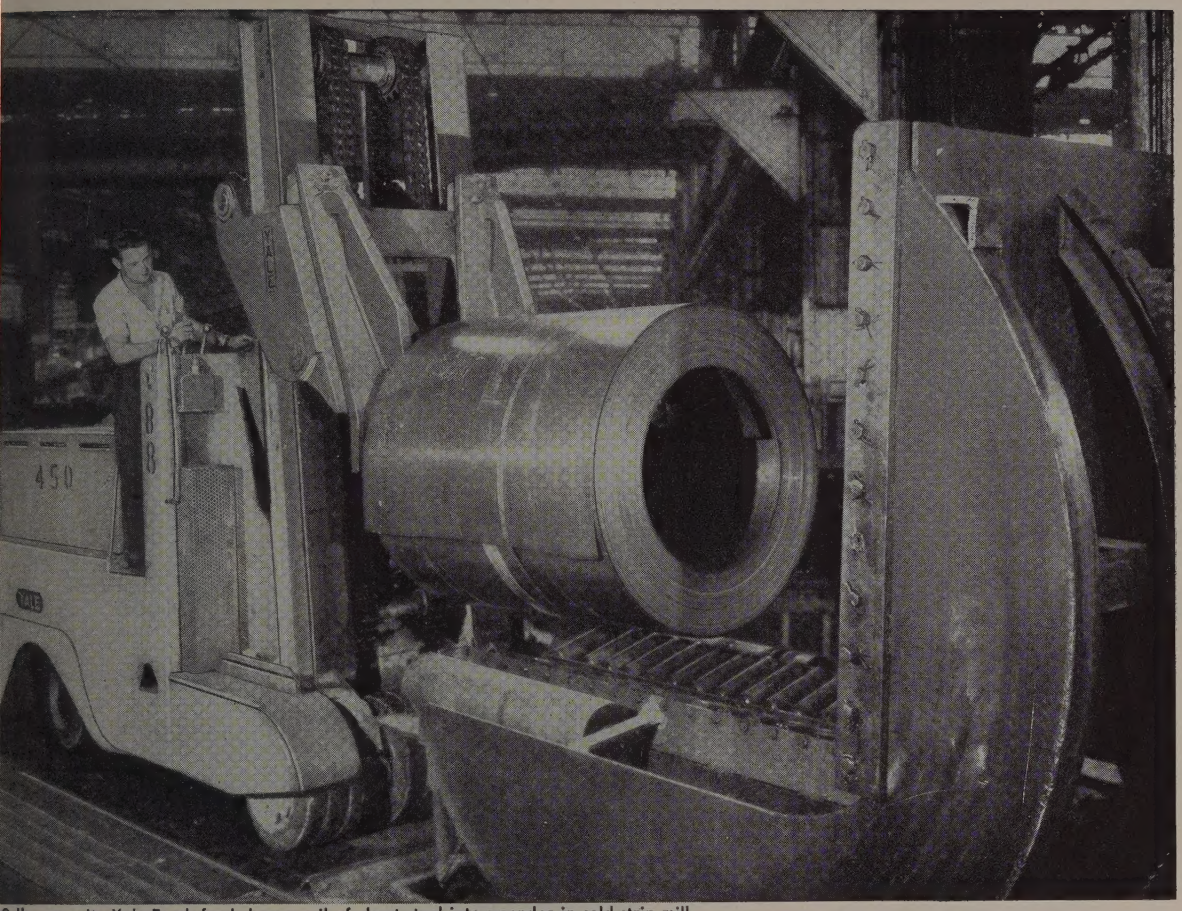
(Delivered prices)

No. 1 heavy melting..	
No. 2 heavy melting..	
No. 1 bundles	
No. 2 bundles	
Mixed steel scrap	
Mixed borings, turnings	
Rails, remelting	
Busheling, new factory: Prepared	
Unprepared	
Short steel turnings	

Cast Iron Grades†

No. 1 machinery cast..	42.0

†F.o.b., shipping point.



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(*Concluded from page* 181)

possible to place orders for t quarter delivery, except in som sizes.

One leading distributor in Philadelphia district, in comme upon the difficulty in obtaining believes it will be at least six m before he can count on an inc in shipments from the mills—at as major products are concerned regards the outlook in plates shapes as particularly stri with prospects in bars and not much more encouraging.

Customers are becoming less ing in their specifications. In instances, regular mill customer getting what they can from and supplementing with ma from distributors.

Distributors doubt that Oct business (on a daily average will be ahead of September's, be of difficulty in maintaining s

Rails, Cars . . .

Track Material Prices, Page 167

Rail demand for 1956 is begi to perk up. Some of the major ern roads, which bought a rela negligible amount of tonnag this year, are in the market. New York Central is asking 40,000 tons. While this is sub tially less than it normally req it is well above its purchase 1955. In the south, the Virginia been a recent buyer.

New car demand has slumped there is increasing pressure for against recent car orders. A mercial car builder (Pullman-S ard Car Mfg. Co.) is planning car building facilities, somethin heard of in some time. Pullman templates an expansion progra its Bessemer, Ala., plant invo facilities for the welding of ca

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 167

Manufacturers of bolts and are establishing new list pric bolts, with accompanying ch in discounts. This is the first ch in bolt list prices in years, alth there have been several chang published discounts, the last past summer to reflect increas steel and labor costs. List pric nuts were revised in 1953.

In general, the new list price down on the smaller bolts an on the larger sizes. With rega the average markdown in the sm bolts, it is explained there have manufacturing economies of which can be passed along to sumers. As to the larger bolts, e mies are not so prevalent.